ORDER NO. VRD0204020C8

Service Manual

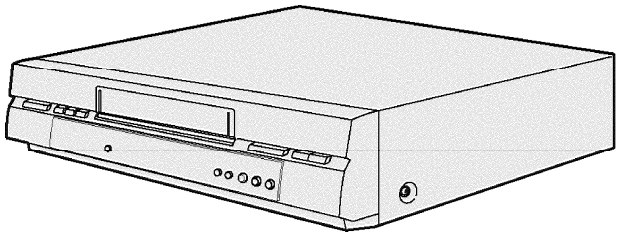
Video Cassette Recorder

Panasonic VHS Hi-Fi

PAL NTSC

NV-FJ630A / NV-FJ630EA / NV-FJ630AM / NV-FJ630EU / NV-FJ630AU / NV-FJ630BD / NV-FJ630BDX

R4-MECHANISM



SPECIFICATIONS

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ITEM	SPECIFICATION	
POWER	SOURCE: 220-240 V AC 50/60 Hz (NV-FJ630A/EA) 110-240V AC 50/60 Hz (NV-FJ630AM/EU/AU/BD/BDX)	
	CONSUMPTION: 13 watts (NV-FJ630A/EA/BD/BDX) 12 watts (NV-FJ630AM/EU/AU)	
RECORDING SYSTEM	2 rotary heads, helical scanning system	
	PAL/ NTSC	
TV TUNER SYSTEM	NV-FJ630A	VHF: CH0-CH12 (PAL B) UHF: CH28-CH69 (PAL G) CATV: 45 MHz-470 MHz (PAL B)
	NV-FJ630EA	VHF: CH1-CH11 (PAL B) UHF: CH21-CH69 (PAL G) CATV: 44 MHz-470 MHz (PAL B)
	NV-FJ630AM	VHF: CHC1-CH12 (PAL/SECAM D) CHE2-CHE12 (PAL/SECAM B) CHR1-CHR12 (SECAM D) UHF: CHC13-CHC57 (PAL/SECAM D) CHE21-CHE69 (PAL/SECAM G) CHE21-CHE69 (SECAM K) CHE21-CHE69 (PAL I) CATV: CHZ1-CHZ35 (PAL/SECAM D) CHS1-CHS41 (PAL/SECAM B) 44 MHz-470 MHz (SECAM D)
	NV-FJ630EU/ AU	VHF: CHE2-CHE12 (PAL/SECAM B) CHR1-CHR12 (SECAM D) UHF: CHE21-CHE69 (PAL/SECAM G) CHE21-CHE69 (SECAM K) CHE21-CHE69 (PAL I) CATV: CHS1-CHS41 (PAL/SECAM B) 44 MHz-470 MHz (SECAM D)
	NV-FJ630BD/ BDX	VHF: CHC1-CH12 (PAL/SECAM D) CHE2-CHE12 (PAL/SECAM B) CHR1-CHR12 (SECAM D) CH2-CH13 (NTSC M: USA) CH1-CH12 (NTSC M: JAP) UHF: CHC13-CHC57 (PAL/SECAM D) CHE21-CHE69 (PAL/SECAM G) CHE21-CHE69 (SECAM K) CHE21-CHE69 (PAL I) CH14-CH79 (NTSC M: USA) CH13-CH62 (NTSC M: JAP) CATV: CHZ1-CHZ35 (PAL/SECAM D) CHS1-CHS41 (PAL/SECAM B) 44 MHz-470 MHz (SECAM D) CH5A-CH125 (NTSC M: USA) CHC13-CHC63 (NTSC: JAP)

ITEM	SPECIFICATION	
RF OUT SYSTEM	NV-FJ630A	UHF: CH28-CH69 (PAL G) 71 ± 3 dBμ, 75 Ω closed
	NV-FJ630EA	UHF: CH21-CH69 (PAL G) 71 ± 3 dBμ, 75 Ω closed
	NV-FJ630AM/ EU/AU/BD/ BDX	UHF: CHE21-CHE69 (PAL/SECAM G, SECAM K, PAL I) 71 ± 3 dBμ, 75 Ω closed
VIDEO	HEADS: 4 rotary heads 1 pair for recording and playback (L-R heads) 1 pair for trick play (L'-R' heads)	
	INPUT: VIDEO IN (AV1: REAR) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated VIDEO IN (AV2: FRONT) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated	
	OUTPUT: VIDEO OUT (AV1: REAR) Connector (Phono type) 1.0 Vp-p, 75 Ω terminated	
AUDIO	HEAD: 1 Stationary head (Normal-mono only) 2 channels (Hi-Fi Sound-Stereo)	
	INPUT: AUDIO IN (AV1: REAR) Connector (Phono type) More than -6 dBV (500mV), 10 kΩ AUDIO IN (AV2: FRONT) Connector (Phono type) More than -6 dBV (500mV), 10 kΩ	
	OUTPUT: AUDIO OUT (AV1: REAR) Connector (Phono type) -6 dBV (500mV), Less than 1kΩ	
TAPE SPEED	SP: 23.39 mm/s (PAL), 33.3 mm/s (NTSC) LP: 11.695 mm/s (PAL) EP: 7.796 mm/s (PAL), 11.1 mm/s (NTSC) Record/Playback Time (PAL): SP: 4 hours with 240 min. type tape LP: 8 hours with 240 min. type tape EP: 12 hours with 240 min. type tape FF/REW Time: 60 sec. with 180 min. type tape JET REW Time: 43 sec. with 180 min. type tape	
OPERATING TEMPERATURE	5˚C - 40˚C	
OPERATING HUMIDITY	35% - 80%	
DIMENSIONS	430 (W)×89 (H)×277 (D) mm	
WEIGHT	3.5 kg	
STANDARD ACCESSORIES	1 pc. DIN-RF Cable 1 pc. Infra-red Remote Controller 1 pc. AV Cable 1 pc. AC Plug Adaptor (NV-FJ630AM: FOR MIDDLE EAST, NV-FJ630BDX)	

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1. INTRODUCTION

This service manual contains technical information which will allow service personnel to understand and service this model.
If the circuit is changed or modified, this information will be followed by supplementary service manual to be filed with original service manual.

Note:

1. Adjustment procedures, Disassembly Procedures and Assembly Procedures for Mechanism Chassis are separate volume from this service manual.

Please refer to the service manual for R4-Mechanism Chassis. (Order No. VRD0202010C8)

2. The Model No. is indicated on the Schematic Diagram and Circuit Board Diagrams as follows.

Model No.	Indication Mark
NV-FJ630A	(A)
NV-FJ630EA	(B)
NV-FJ630AM	(C)
NV-FJ630EU	(D)
NV-FJ630AU	(E)
NV-FJ630BD/BDX	(F)

2. GENERAL DESCRIPTIONS

2.1. SERVICE CAUTION-1

When the Microprocessor IC6001 and/or Back-up battery B6001 are replaced, read the following procedure carefully and proceed it.

[REASONS]
There is a RAM in the IC6001, which is backing up:

1. Programme Navigation Data [See NOTE1]

2. TV Tuning Data

3. PG Shifter Adjustment Data

4. Option Setting Data

When IC6001 are replaced, all above listed data become not available.
These data is backing up by using the power source of:
***AC Connected: AC Power source**
***AC Disconnected: Back-up Battery (B6001) & Back-up Capacitor (C2013)**

[NOTE1]
As for your reference, without inserting a tape into a VCR, you can confirm that the NAVI data that is back up with IC6001 as shown in the following steps.

1. Indicate the "NAVI" mark on the Front Information Panel. (Press the Menu button and select the option, then set the "NAVI" to ON mode.)

2. Turn on the Service Mode and press the "NAVI" button on the Remote Controller in more than 5 seconds. The "NAVI" data list is displayed on the Monitor. (Press the "MENU" button on the Remote Controller for cancellation.)

Although stored NAVI data can be confirmed on the monitor, there is no way to transfer the NAVI data to IC6001which is newly mounted.

2.1.1. REPLACING PROCEDURE [IC6001]

[1.PREPARATION]
Before replacing IC6001:

1. **Take a note that stored TV broadcast channels. (Because, its user may store TV broadcasts by manually other than "Auto Tuning" operation and it is also erased.)**

NOTE:
During servicing, do not make short IC6001-pin 37 (5V) with other line/Components otherwise IC6001 may be broken.

CAUTION:
***When replacing the B6001, be sure to read/follow the "HOW TO REPLACE THE LITHIUM BATTERY" section.**

[2.REPLACING PROCEDURE IN STEPS]

STEP1.PREPARATION

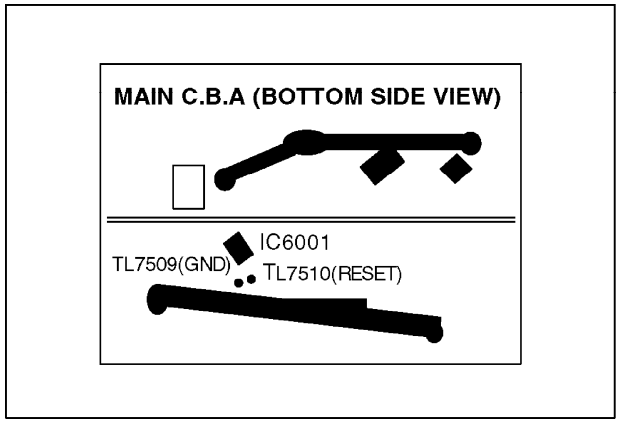
1. **Remove the C.B.A. with Mechanism unit by referring the Disassembly procedure.**

STEP2.REPLACE THE IC6001

1. **Disconnect the AC plug and replace the IC6001. (Do not make a short circuit between IC6001-pin37 and other pins/components.)**

STEP3.RESET THE IC6001 AT ONCE

1. **Connect the AC plug.**
2. **Connect a jumper wire between TL7510 (RESET) and TL7509 (GND) for a second to reset the Microprocessor IC6001.**



Note:
Since the resistance at pin 1 as well as pin 2 of IC6001 decides the model distinction data, no need to set up the Model code, which is necessary in previous model.

STEP4.LINE-IN SETTING & ACTIVATE PLUG-IN A.T.P.
(FOR EXCEPT NV-FJ630A)

1. **Press the Channel up and down keys simultaneously for more than 3 seconds, under the condition of the no tape is in the unit.**
2. **Confirm that "A1" and "A2" can be displayed on the FIP by pressing the CH UP and CH DOWN buttons.**

NOTE:
If "DIRECT REC" on the OPTION setting screen is set to [ON], the input signal is fixed to "A1", and the Channel up and down keys are not effective.

3. **Disconnect the AC plug for few seconds and connect it again, and press POWER button for turning the power to on from off to carry out the "Plug in Auto Tuner Preset".**
4. **Since other than the channels that can be stored by "Auto Tuning" operation are not available yet, preset manually by consulting the note of its available TV channels of which you took before.**

NOTE:
The Factory shipping condition of OSD setting is not restored by above operation.

5. **Change the OSD setting to the Factory shipping condition if necessary, by referring Option Setting on the Operating Instructions as following charts.**

EXAMPLE:

OPTION	
TAPE SELECT	[AUTO]
NTSC INPUT SELECT	[AUTO]
NTSC PB SELECT	[on PAL TV]
JET NAVIGATOR	[OFF]
DELETE NAVIDATA	[NO]
OSD REC	[OFF]
DIRECT REC	[OFF]
MONAURAL	[OFF]
SELECT:	END: MENU

STEP5.PERFORM THE PG SHIFTER ADJUSTMENT
Refer to the Electrical Adjustment Procedures.

2.2. CAUTION FOR AC MAINS LEAD (NV-FJ630BD)

2.3. HOW TO REPLACE THE LITHIUM BATTERY

2.3.1. GENERAL DESCRIPTION

There is a RAM in the IC6001, which is backing up the following data by using the power source of B6001 (Back-up Battery) and C2013 (Back-up Capacitor: Back-up time is approximately 30 minutes).

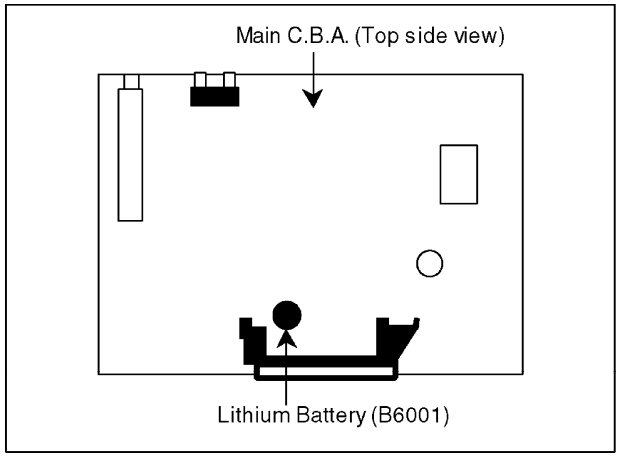
1. **Programme Navigation Data**
2. **TV Tuning Data**
3. **PG Shifter Adjustment Data**
4. **Option Setting Data**

2.3.2. REPLACEMENT PROCEDURE

NOTE:
This work should be finished within 30 minutes so that the RAM data would not be lost as running out of current from the Back-up Capacitor C2013.

1. **Remove the Top Panel and Mechanism unit with Main C.B.A by referring the Disassembling Procedure.**
2. **Unsolder the Lithium Battery: B6001 and then replace it into new one (See Fig. B1).**

Fig. B1



NOTE:
The lithium battery is a critical component (Manufactured by Panasonic.)
It must never be subjected to excessive heat or discharge.
It must therefore only be fitted in equipment designed specifically for its use.
Replacement batteries must be of the same type and manufacture.
They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.
Do not attempt to re-charge the battery or re-use it for any other purpose.
It should be disposed of in waste products destined for burial rather than incineration.

CAUTION
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

PRECAUTION
Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion. Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

VORSICHT
Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen. Verbrauchte Batterien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

VARNING
Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering. Udskiftning má kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

2.4. SERVICE CAUTION-2

2.4.1. CAUTION FOR AUTO TUNING

PROCEDURE
Auto Tuning will start by the following procedure.

1. **Connect the DIN-RF Cable.**
2. **Connect the AC Mains Lead.**
3. **Turn on the VCR.**
   Auto Tuning will start.
   Auto Tuning search for TV stations from VHS minimum to UHF maximum and memorizes every tuned program position. Other program positions are skipped.
   Auto Tuning takes five or more minutes to complete its search.
   Do not touch the VCR during Auto Tuning.
   Auto Tuning will stop halfway, if the VCR is operated or the aerial lead and/or the mains lead are disconnected.
   In case the VCR stopped during Auto Tuning, the VCR has to be reset and restarted. See the following item 2.

NOTE:

1. **If the VCR is turned on with the antenna not connected, all channels are skipped. Therefore, firmly connect the antenna and then turn the VCR off and on again to execute Auto tuning.**
2. **When Auto Tuning is canceled halfway, Auto Tuning is not execute even if the VCR is turned off and then turned on again,**
   In this case, Auto Tuning has to be restarted by the following procedure.
   A. Press EJECT and remove the Videocassette.
   B. Keep UP and DOWN on the VCR pressed simultaneously for 3 seconds or more during the VCR on.
   The channel displayed on the VCR display disappears for moment then changes to 2.
   C. Turn off the VCR and then turn it on. Auto Tuning commences.
3. **If you turn the VCR off during Auto Tuning, Auto Tuning will stoop halfway.**
   The VCR should be reset and restarted by the item 2 in order to execute Auto Tuning.

4. If the VCR starts playback during Auto Tuning, Auto Tuning will stop halfway.
The VCR should be reset and restart by the item 2 in order to execute Auto Tuning.

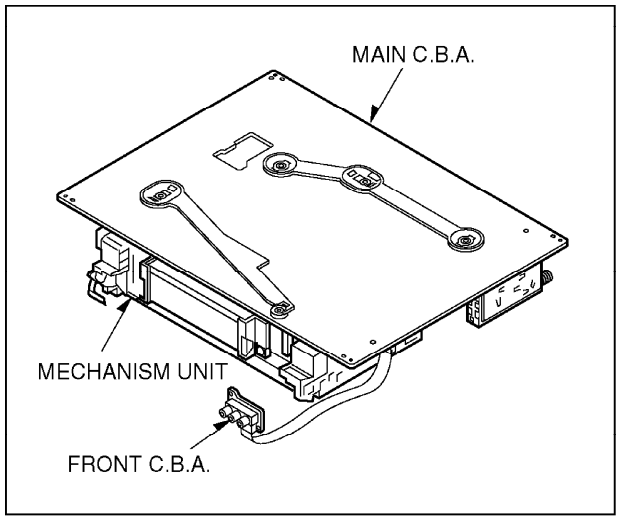
5. To cancel Auto Tuning Mid-operation, press POWER During Auto Tuning (The VCR is turned off).

6. When the VCR is moved to the other area or country, TV broadcasts should be stored again.

2.4.2. CHECKING OF MAIN C.B.A.

When servicing the MAIN C.B.A., take out the MAIN C.B.A. and mechanism from the frame turn over.

Fig. S1



2.4.3. REMOVAL OF CASSETTE TAPE

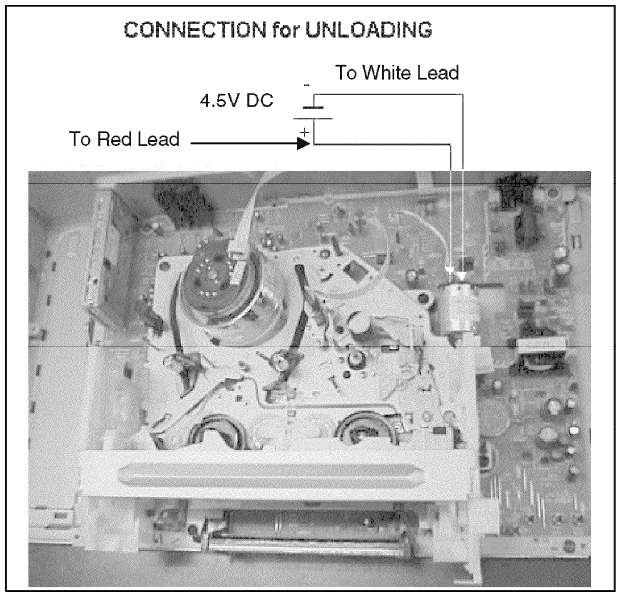
When the cassette tape could not be uninstalled from an electrical malfunction, There are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.
A. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.
B. Press STOP button in order to unload the mechanism. (Pay attention of tape slack)
Service Mode Indication:
7 ** ** (STOP) → 7 0L ** (EJECT)

2. Removal by manual operation by rotating the Loading Motor with the batteries.
A. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring the Disassembly Procedures.

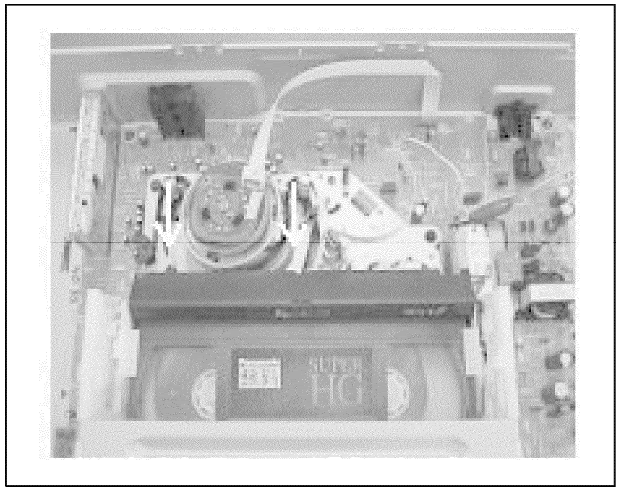
B. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor following Fig. S2 .

Fig. S2



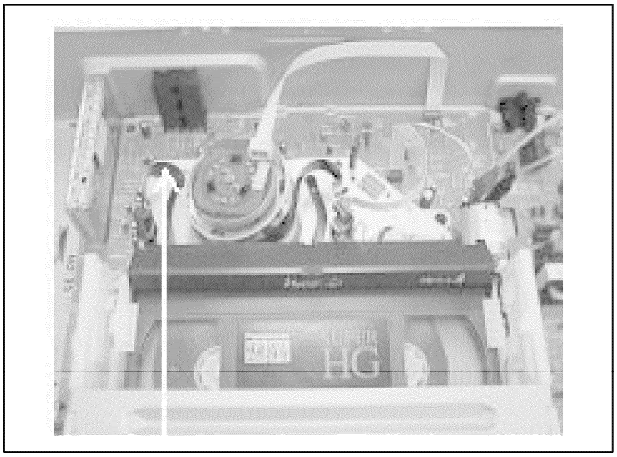
C. Stop unloading just before unloading would be completed as shown in Fig. S3 .

Fig. S3



D. Then the tape becomes slack as shown in Fig. S4 .

Fig. S4



E. Rotate the S-Reel by a small minus screwdriver (Fig. S5) to remove the tape slacks as shown in Fig. S6 .

Fig. S5

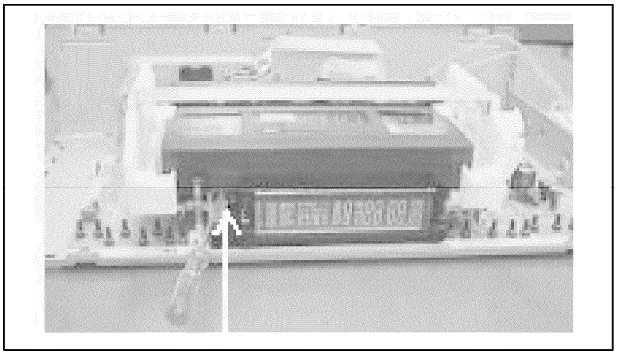
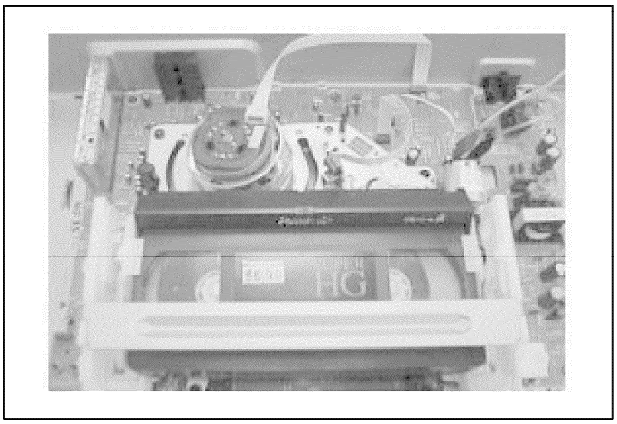
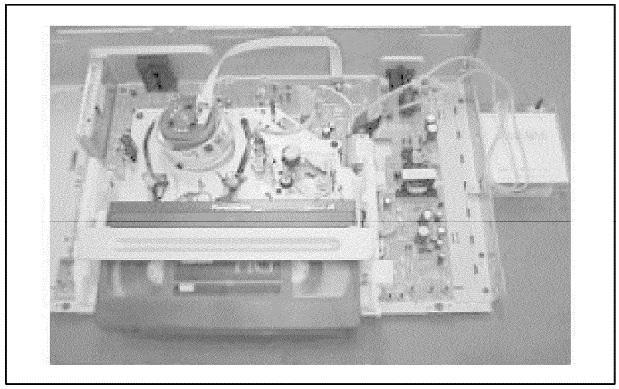


Fig. S6



F. Then unload again to remove the cassette tape as shown in Fig. S7 .

Fig. S7

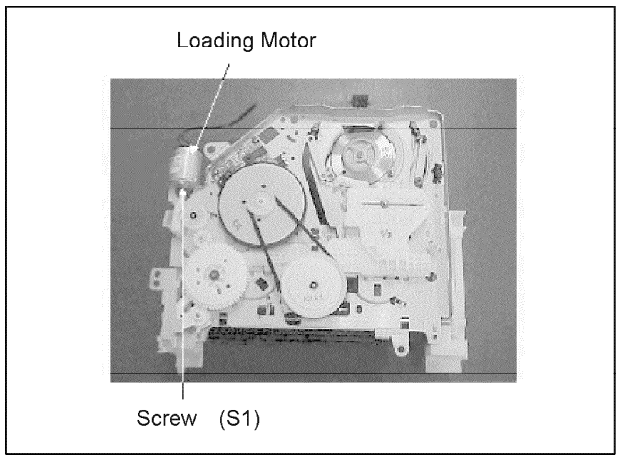


3. Removal by manual operations after uninstalling the mechanism.

A. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring the Disassembly Procedures.

B. Remove the Screw (S1) and remove the Loading Motor both shown in Fig. S8 .

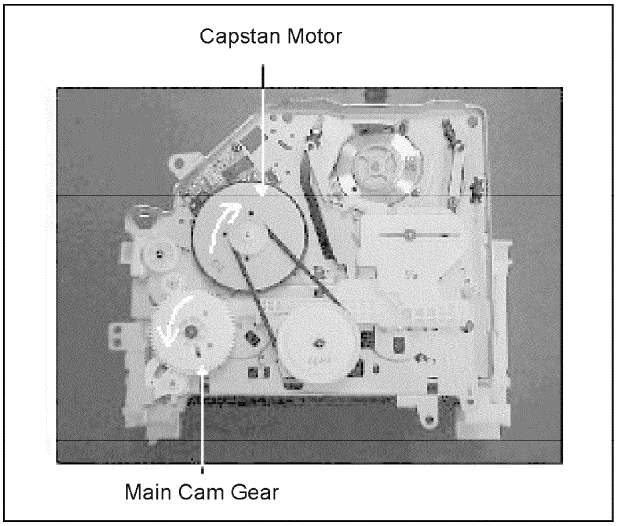
Fig. S8



C. Rotate the Main Cam Gear counter-clockwise (Fig. S9) until just before the unloading would be completed as shown in Fig. S3 .

D. Rotate the Capstan Motor clockwise (Fig. S9) to remove the tape slacks as shown in Fig. S6 .

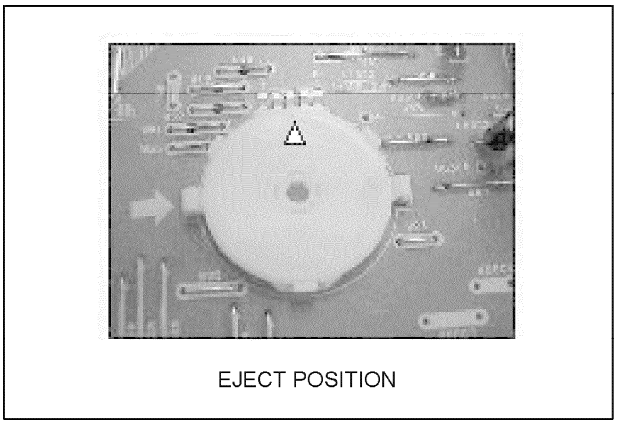
Fig. S9



E. Rotate the Main Cam Gear counter-clockwise again (Fig. S9) to remove the cassette-tape as shown in Fig. S7 .

F. Set the Position Switch to EJECT POSITION certainly as shown in Fig. S10 .

Fig. S10



G. Install the Loading Motor and tighten screw (S1) as shown in Fig. S8 .

2.4.4. CYLINDER UNIT REPLACEMENT

NOTE:
Replacing only Upper Cylinder unit of R4 Mechanism cannot be performed, as securing of RT gap is impossible out of factory, please replace the cylinder by whole Cylinder Unit. The PG Shifter Adjustment should be performed after replacement of theDD Cylinder Unit.

1. Remove the Mechanism Unit from Main C.B.A./Chassis by referring "Disassembly Procedure".

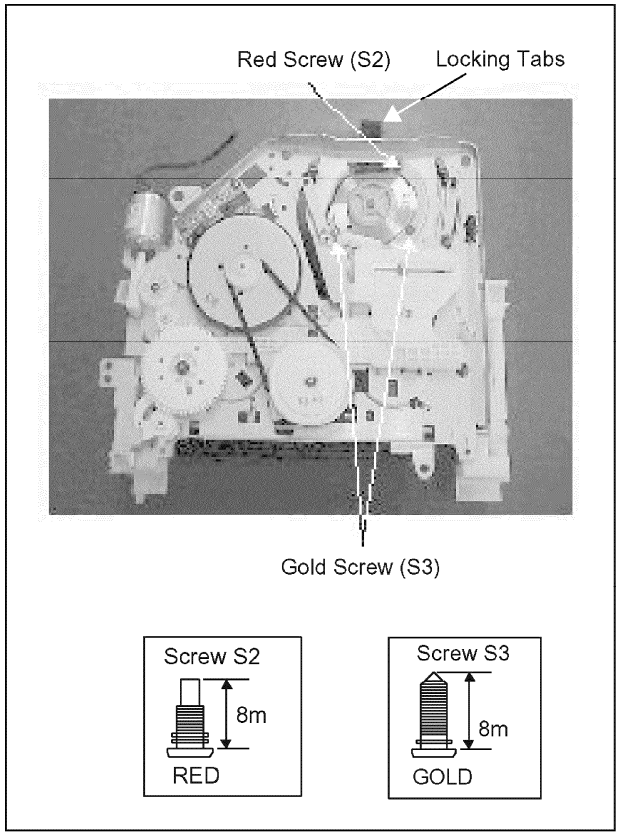
2. Unlock 2 locking tabs on a side to release the Cylinder Flexible Card as shown in Fig. S11 .

CAUTION:

Handle the Cylinder Flexible Card with care. When it damaged, you should replace it with a new Cylinder Unit.

3. Remove a red Screw (S2) and 2 gold Screws (S3) to remove the Cylinder Unit shown in Fig. S11 .

Fig. S11

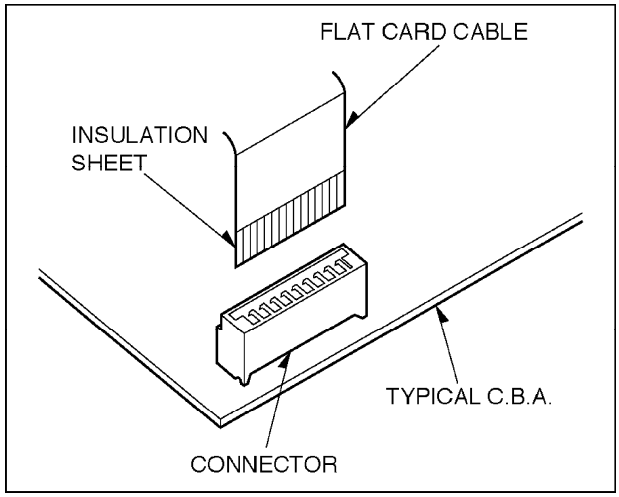


NOTE:
When reassembling, perform the steps in the reverse order, and perform the PG SHIFTER ADJUSTMENT certainly after CYLINDER UNIT REPLACEMENT.

2.4.5. FLAT CARD CABLE INSTALLATION

When installing the Flat Card Cable on the connector, install the Flat Card Cable with the cable contacts facing the connector contacts.

Fig. S12



2.5. SELF-DIAGNOSIS & SERVICE INFORMATION DISPLAY

Refer to the Service Manual for R4 Mechanism Chassis.
(Order No.: VRD0202010C8).

2.6. INTRODUCTION OF VIDEO HEAD CLEANING CASSETTE / (POLISHING TYPE)

1. **We are pleased to introduce Panasonic Video Head Cleaning Cassette, VFK0923FT [for service purposes] and VFK0923FSE [for end users] for all VHS/S-VHS VCP and VCR.**
2. **These cleaning cassettes are exclusive removing the hard and sticky clogging on video heads.**
3. **These improve the efficiency of video head cleaning service and shortening cleaning time for end users.**

VFK0923FT (For Service usage)	
Type of Cassette	**Full VHS Cassette**
Cleaning Time	**10 Seconds/Time**
Tape Length	**20 m**
Usability in a Path	**180 Times**

VFK0823FSE (For end users)	
Type of Cassette	**Full VHS Cassette**
Cleaning Time	**10 Seconds/Time**
Tape Length	**3.34 m**
Usability in a Path	**30 Times**

Note:

The tape material itself is the same in both types.

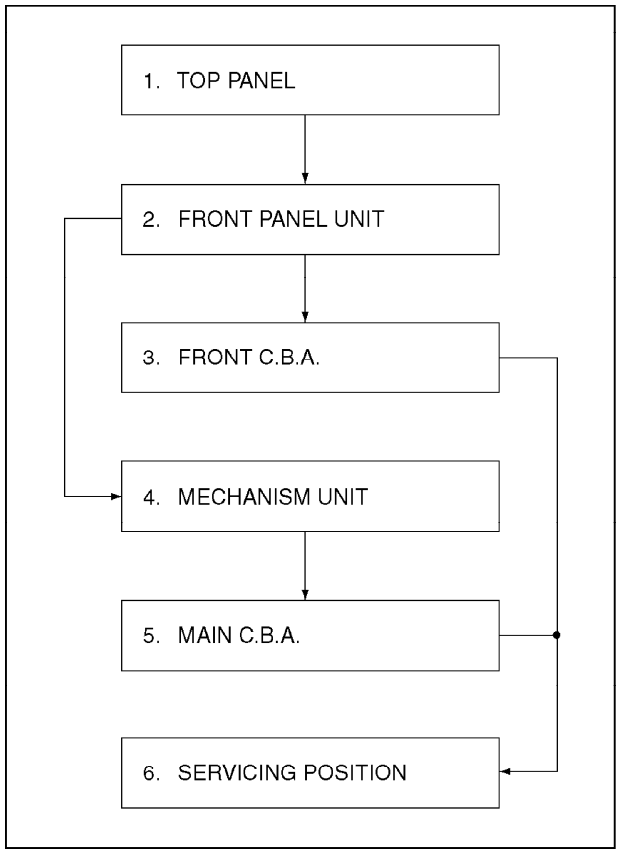
3. ADJUSTMENT PROCEDURES

3.1. DISASSEMBLY METHOD

3.1.1. DISASSEMBLY FLOW CHART

This flow chart indicates disassembly steps of the cabinet parts and the circuit boards in order to find the necessary items for servicing.
When reassembling, perform the steps in the reverse order.

Fig. D1

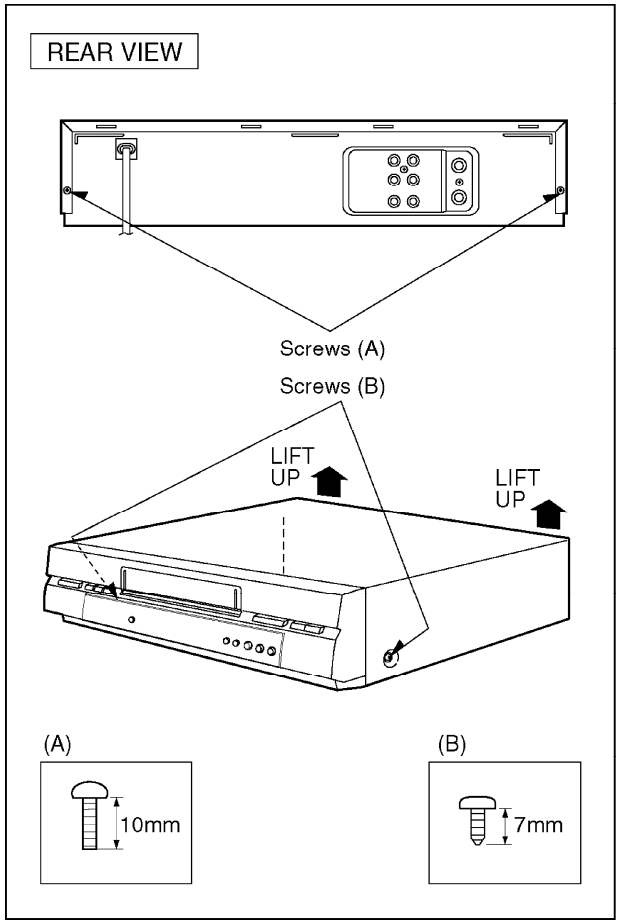


3.1.2. DETAIL OF DISASSEMBLY METHOD

1. REMOVAL OF THE TOP PANEL

Remove	**2 Screws (A)**
Remove	**2 Screws (B)**

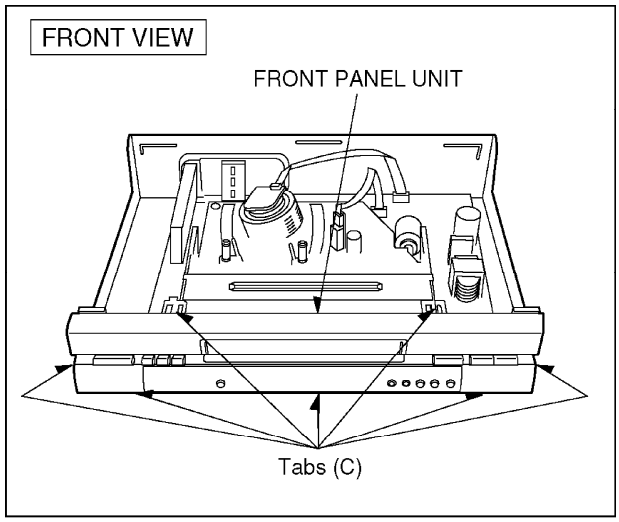
Fig.D2



2. REMOVAL OF THE FRONT PANEL UNIT

Unlock	**7 Tabs (C)**

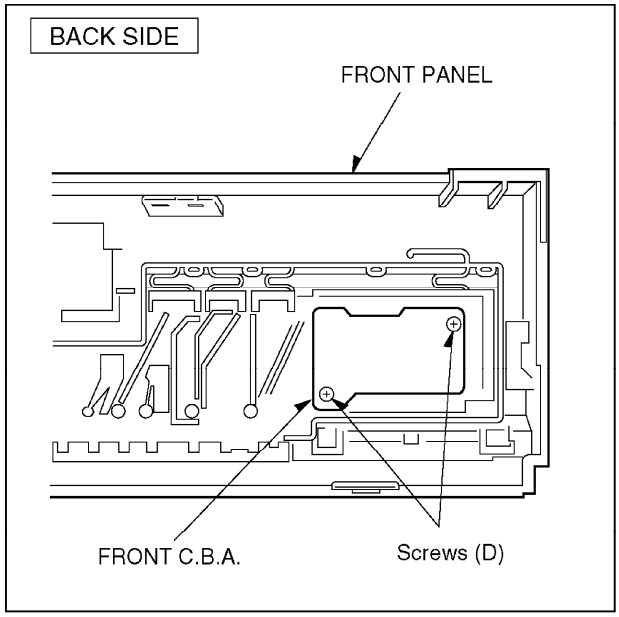
Fig. D3



3. REMOVAL OF THE FRONT C.B.A.

Remove	**2 Screws (D)**

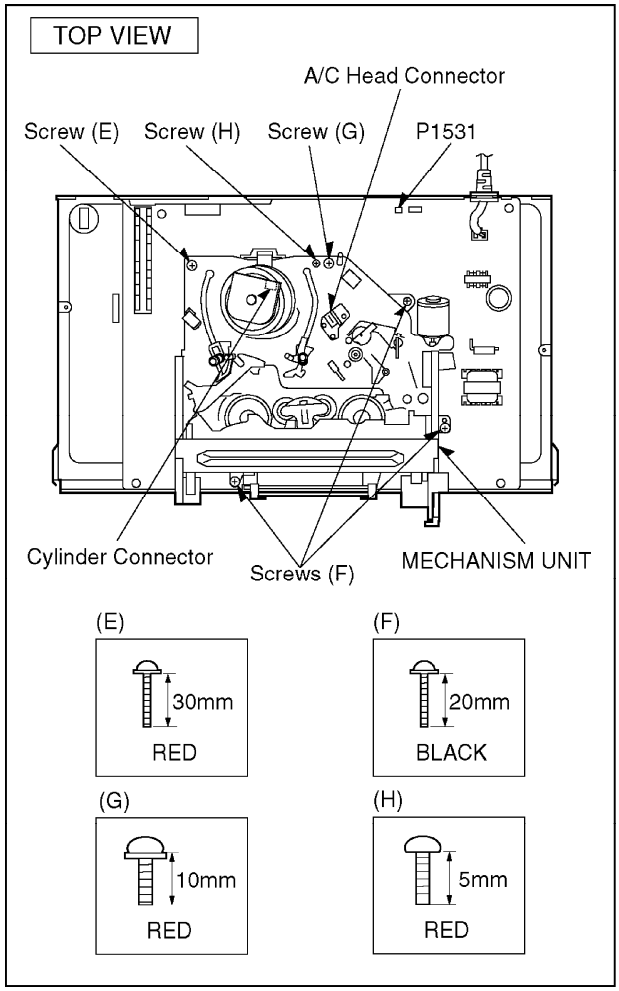
Fig. D4



4. REMOVAL OF THE MECHANISM UNIT

Remove	**Screw (E)**
Remove	**3 Screws (F)**
Remove	**Screw (G)**
Remove	**Screw (H)**
Disconnect	**Cylinder Connector**
Disconnect	**A/C Head Connector**
Disconnect	**P1531**

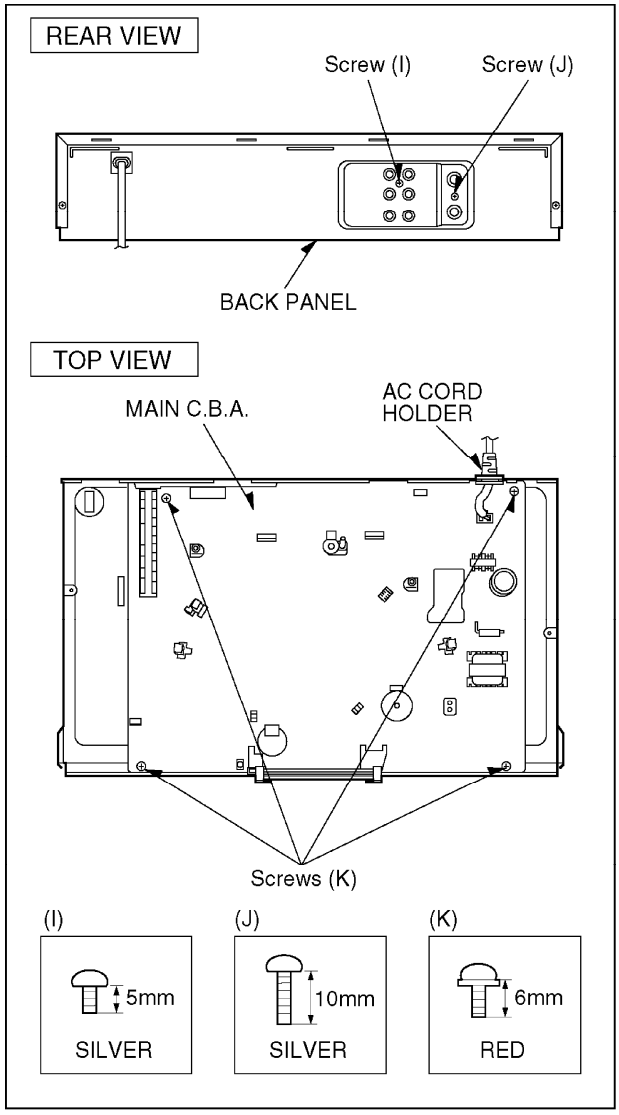
Fig. D5



5. REMOVAL OF THE MAIN C.B.A.

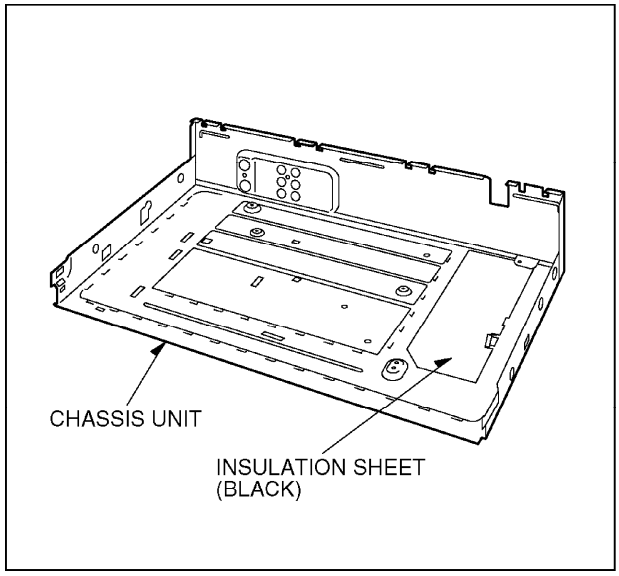
Remove	**Screw (I)**
Remove	**Screw (J)**
Remove	**4 Screws (K)**
Remove	**AC CORD HOLDER**

Fig. D6



NOTE:
Before mounting the MAIN C.B.A. onto the frame, be sure to confirm that the insulation sheet is mounted on the frame as shown in Fig. D7 .

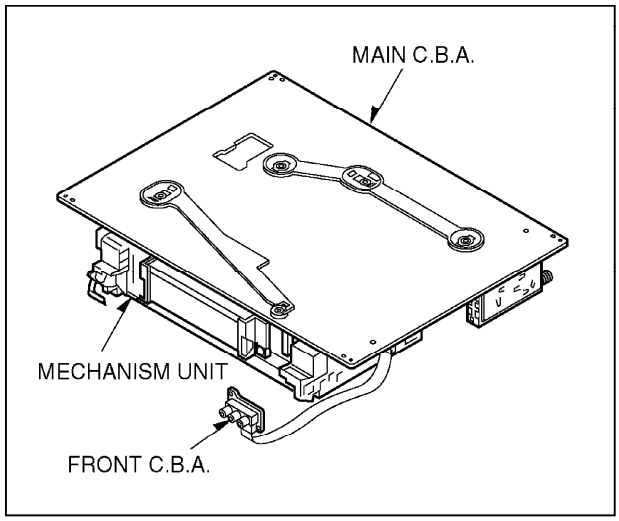
Fig. D7



6. SERVICING POSITION

Install the Mechanism Unit on to the MAIN C.B.A..
Then fix a screw (H), and connect two frexible card Connectors (Cylinder connector, AC Head connector) and P1531 as shown in Fig. D5 .

Fig. D8



3.2. MECHANICAL ADJUSTMENT PROCEDURES

Refer to the Service Manual for R4-Mechanism Chassis.
(Order No. VRD0202010C8)

3.3. ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete adjustment procedures required for electric circuits of VCR.

3.3.1. TEST EQUIPMENT

To perform electrical adjustments following equipment is required.

1. VHS Alignment Tape. (VFJ8125H3F)

2. Monitor

3.3.2. SERVO SECTION

PG SHIFTER ADJUSTMENT

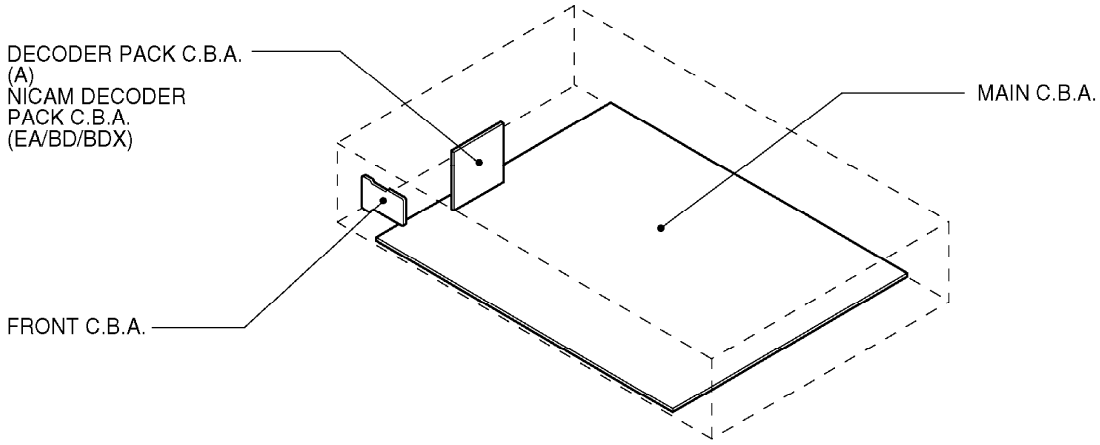
	PROCEDURE	F.I.P. DISPLAY
1.	Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	
2.	Activate the Service Mode 2 While keep pressing FF key, press the EJECT key in twice.	
3.	Activate the Entering Mode. Press the EJECT key for more than 3 seconds.	
4.	Set the Mode 2. Press the CH UP key once.	
5.	Insert the alignment cassette tape (VFJ8125H3F) The PG Shifter Adjustment starts automatically.	
6.	When the sequence of the automatic adjustment has been terminated, the following action has been made. * SUCCEED: The cassette tape is ejected. * ERROR: The "F20", "F21", "F22" or "F23"is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.	
7.	Exit from Service Mode. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	

PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	**NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)**
F21	**NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)**
F22	**NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.**
F23	**NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)**

NOTE:
After replacing the DD Cylinder, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

3.3.3. CIRCUIT BOARD LAYOUT



4. ABBREVIATIONS

5. INPUT/OUTPUT CHART FOR IC6001

Fig. MP1

Fig. MP2

Fig. MP3

Fig. MP4

6. WAVEFORM TABLE & VOLTAGE CHART

6.1. WAVEFORM TABLE

6.2. VOLTAGE CHART

7. BLOCK DIAGRAMS

7.1. SYSTEM CONTROL & SERVO BLOCK DIAGRAM

7.2. LUMINANCE & CHROMINANCE BLOCK DIAGRAM

7.3. AUDIO BLOCK DIAGRAM

8. SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM

8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM

8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

8.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM

8.7. DECODER PACK SCHEMATIC DIAGRAM (NV-FJ630A)

8.8. NICAM DECODER PACK SCHEMATIC DIAGRAM (NV-FJ630EA/BD/BDX)

8.9. FRONT SCHEMATIC DIAGRAM

9. CIRCUIT BOARD ASSEMBLIES

9.1. DECODER PACK C.B.A. (NV-FJ630A)

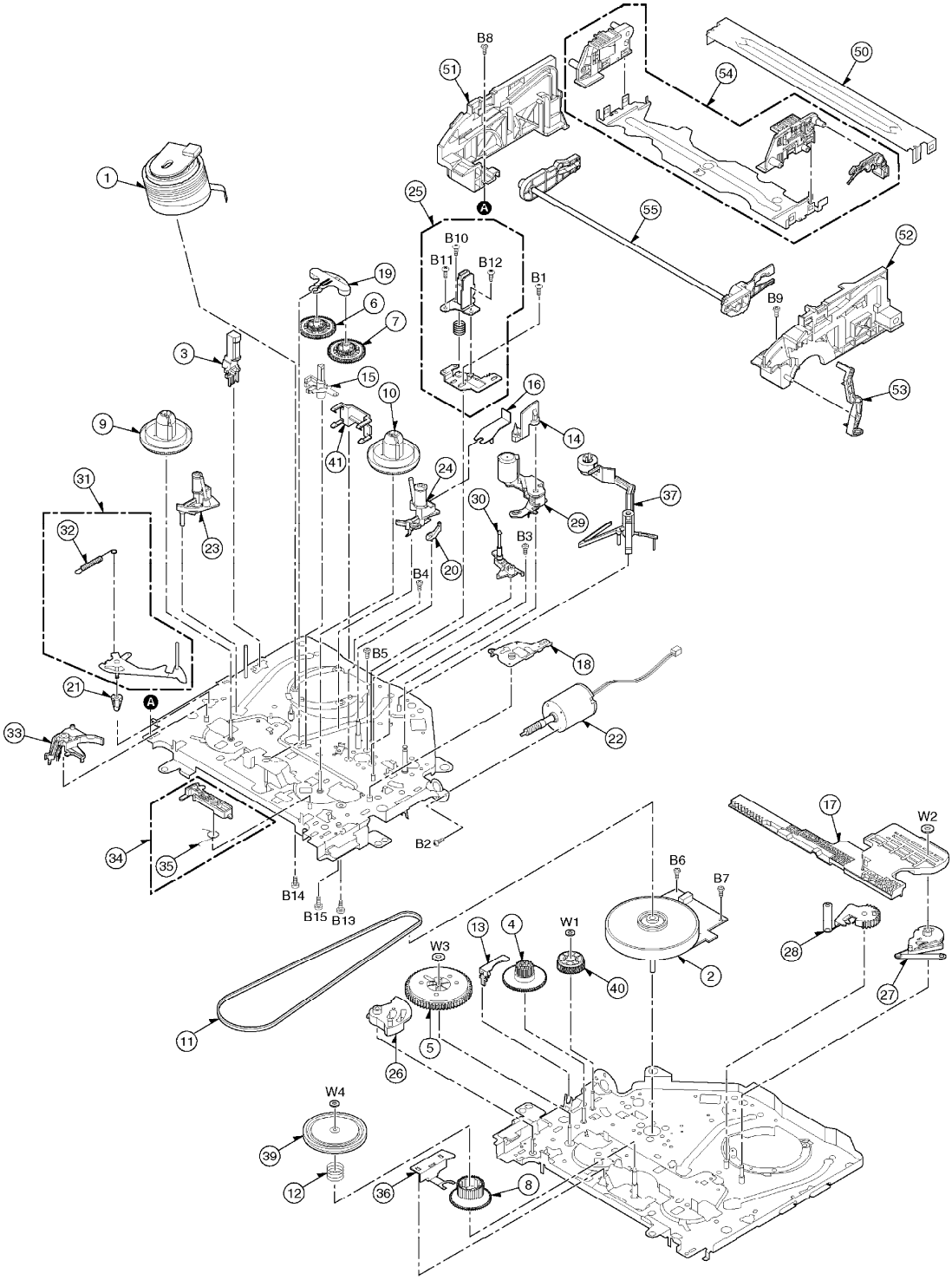
9.2. NICAM DECODER PACK C.B.A. (NV-FJ630EA/BD/BDX)

9.3. MAIN C.B.A.

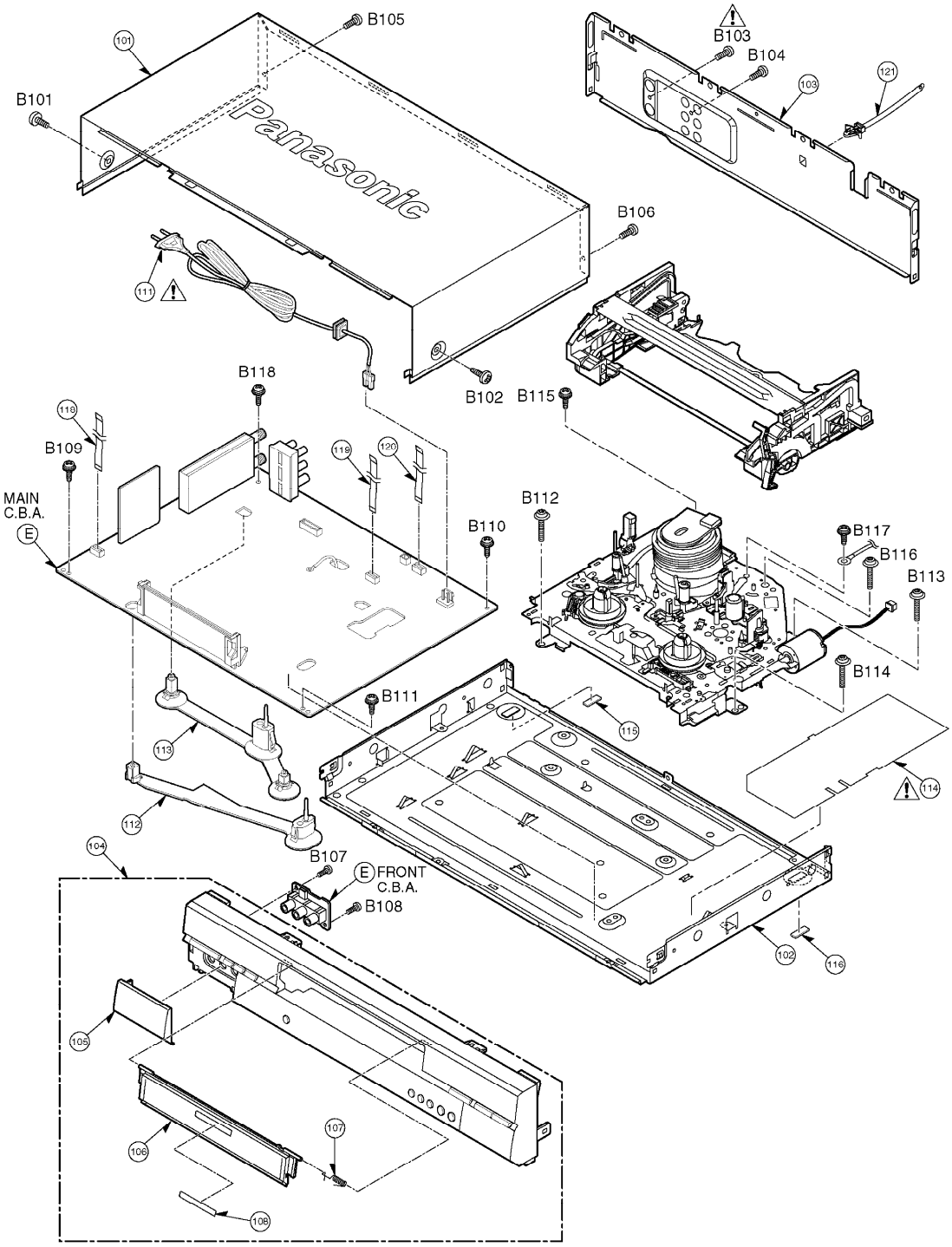
9.4. FRONT C.B.A.

10. EXPLODED VIEWS

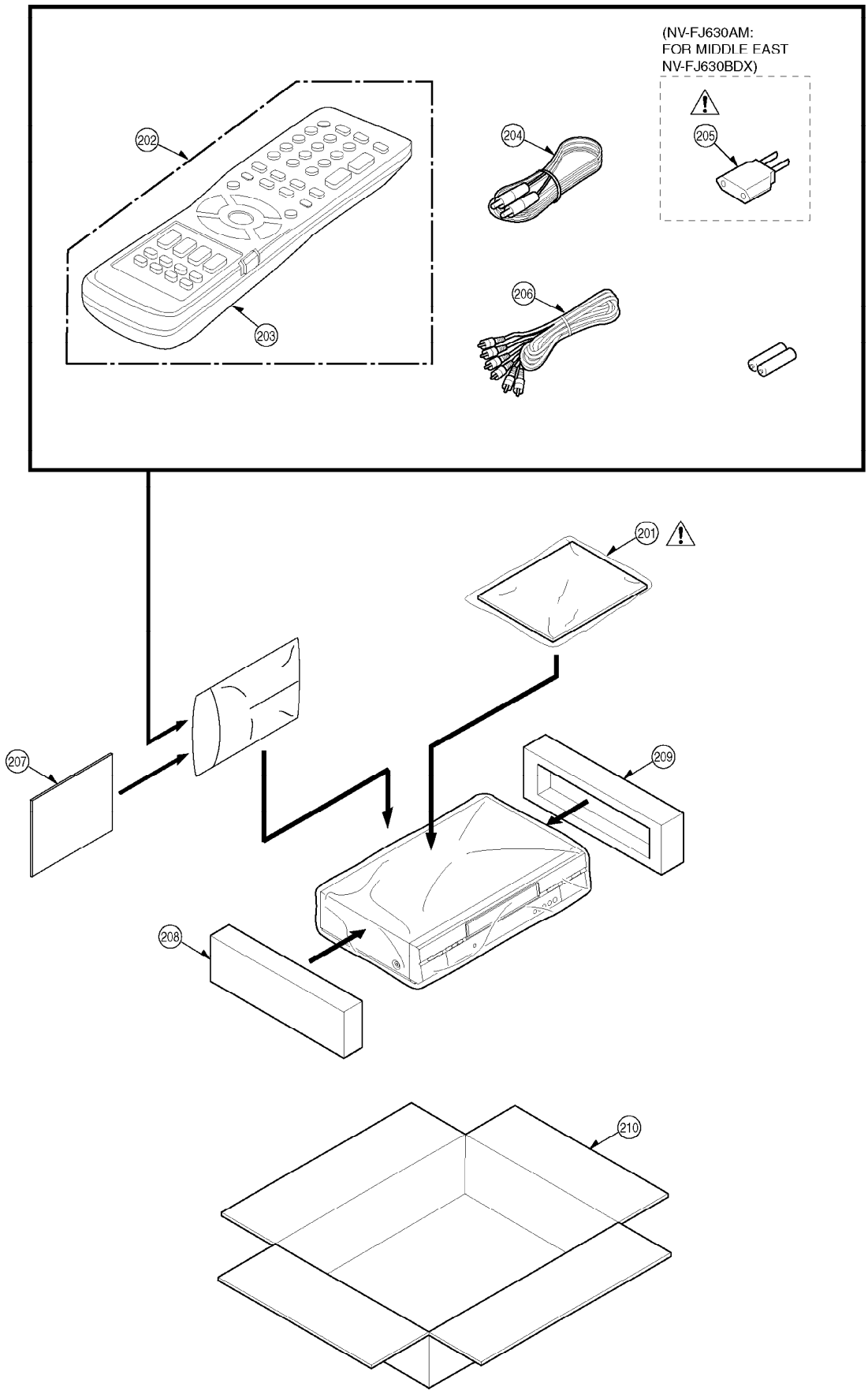
10.1. CHASSIS PARTS SECTION



10.2. CASING PARTS SECTION



10.3. PACKING PARTS SECTION



11. REPLACEMENT PARTS LIST

11.1. CHASSIS PARTS SECTION PARTS LIST

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. " [MAV] " in the Remarks column shows that the parts is/are supplied from MAV.

Ref. No.	Part No.	Part Name & Description	Remarks
1	VEG1588-R	CYLINDER UNIT	[MAV] NV-FJ630A/EA/AM/BD/BDX
1	VEG1589-R	CYLINDER UNIT	[MAV] NV-FJ630EU-S/EU-K/AU
2	VEM0750	CAPSTAN UNIT	[MAV]
3	L1AZ00000004	FE HEAD	
4	VDG1510	INTERMEDIATE GEAR	[MAV]
5	VDG1511	MAIN CAM GEAR	[MAV]
6	VDG1512	IDLER GEAR	[MAV]
7	VDG1512	IDLER GEAR	[MAV]
8	VDG1514	CHANGE GEAR	[MAV]
9	VDR0372	REEL TABLE	[MAV]
10	VDR0372	REEL TABLE	[MAV]
11	VDV0391	CAPSTAN BELT	[MAV]
12	VMB3550	CHANGE GEAR SPRING	[MAV]
13	VMD4249	WORM SHAFT HOLDER	[MAV]
14	VMD4252	OPENER PIECE	[MAV]
15	VMD4253	LED PRISM	[MAV]
16	VMD4611	TAPE GUIDE	[MAV]
17	VML3624	MAIN LEVER	[MAV]
18	VML3626	PINCH CHARGE ARM	[MAV]
19	VML3632	IDLER ARM	[MAV]
20	VMX3092	P4 CAP	[MAV]
21	VDB1431	TENSION ARM BOSH	
22	VEM0751	LOADING MOTOR UNIT	[MAV]
23	VXA7105	SUPPLY SHAFT HOLDER UNIT	[MAV]
24	VXA7106	TAKE UP SHAFT HOLDER UNIT	[MAV]
25	VXA7107	AC HEAD UNIT	[MAV]
26	VXA7311	SECTOR GEAR UNIT	[MAV]
27	VXL3107	SUPPLY LOADING ARM UNIT	[MAV]
28	VXL3108	TAKE UP LOADING ARM UNIT	[MAV]
29	VXL3109	PINCH ARM UNIT	[MAV]
30	VXL3110	P5 ARM UNIT	[MAV]
31	VXL3111	TENSION ARM UNIT	[MAV]
32	VMB3547	TENSION SPRING	[MAV]
33	VXL3112	SUPPLY BRAKE ARM UNIT	[MAV]
34	VXL3113	TAKE UP BRAKE ARM UNIT	[MAV]
35	VMB3548	TAKE UP BRAKE SPRING	[MAV]
36	VXL3124	CHANGE LEVER UNIT	[MAV]
37	VXL3131	CLEANER ARM UNIT	[MAV]
39	VXP2133	CENTRE CLUTCH UNIT	[MAV]
40	VXP2168	TORQUE CLUTCH UNIT	[MAV]
41	VMD4344	FLAT CABLE HOLDER	[MAV]
50	VMA0L25	TOP PLATE	[MAV]
51	VMD4255	SIDE PLATE (L)	[MAV]
52	VMD4254	SIDE PLATE (R) UNIT	[MAV]
53	VML3633	OPENER LEVER	[MAV]
54	VXA7110	CASSETTE HOLDER UNIT	[MAV]
55	VXL3114	MAIN SHAFT UNIT	[MAV]
B1	VHD1044	SCREW	

Ref. No.	Part No.	Part Name & Description	Remarks
B2	XSN3+35	SCREW	[MAV]
B3	XTN26+7J	SCREW	
B4	XTN26+7J	SCREW	
B5	XTN26+7J	SCREW	
B6	XTV26+5F	SCREW	
B7	XTV26+5F	SCREW	
B8	XTV26+8FR	SCREW	
B9	XTV26+8FR	SCREW	
B10	VHD1066	SCREW	
B11	VHD1066	SCREW	
B12	VHD1185	SCREW	
B13	VHD1095	SCREW	
B14	VHD1117	SCREW	
B15	VHD1117	SCREW	
W1	VMX2208	WASHER	
W2	VMX3114	WASHER	[MAV]
W3	VMX2699	WASHER	
W4	VMX3196	WASHER	[MAV]

11.2. CASING PARTS SECTION PARTS LIST

Note: 1. "Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. " [MAV] " in the Remarks column shows that the parts is/are supplied from MAV.

Ref. No.	Part No.	Part Name & Description	Remarks
101	VGM1810	TOP PANEL	[MAV] NV-FJ630A/EA/AM/EU-S/AU/BD/BDX
101	VGM1855	TOP PANEL	[MAV] NV-FJ630EU-K
102	VMP6956	CHASSIS FRAME	[MAV]
103	VMP7123	BACK PANEL	[MAV]
104	VYP8422	FRONT PANEL (1) UNIT	[MAV] NV-FJ630A
104	VYP8423	FRONT PANEL (1) UNIT	[MAV] NV-FJ630EA
104	VYP8424	FRONT PANEL (1) UNIT	[MAV] NV-FJ630AM
104	VYP8425	FRONT PANEL (1) UNIT	[MAV] NV-FJ630EU-S
104	VYP8487	FRONT PANEL (1) UNIT	[MAV] NV-FJ630EU-K
104	VYP8490	FRONT PANEL (1) UNIT	[MAV] NV-FJ630AU
104	VYP8426	FRONT PANEL (1) UNIT	[MAV] NV-FJ630BD/BDX
105	VKF3516	DOOR	[MAV] NV-FJ630A/AM/AU/EU-S
105	VKF3517	DOOR	[MAV] NV-FJ630EA
105	VKF3551	DOOR	[MAV] NV-FJ630EU-K
105	VKF3552	DOOR	[MAV] NV-FJ630BD/BDX
106	VKF3548	BLINDER PANEL	[MAV] NV-FJ630A/EA/AM/AU/EU-S/BD/BDX
106	VKF3549	BLINDER PANEL	[MAV] NV-FJ630EU-K
107	VMB2521	BLINDER SPRING	
108	VGB0554	SUPER DRIVE BADGE	
111	VJA1137	AC CORD	⚠ NV-FJ630A/EA K2CJ2DZ00005
111	VJA1038	AC CORD	⚠ NV-FJ630AM/EU-S/EU-K/AU/BDX
111	VJA1138	AC CORD	⚠ [MAV] NV-FJ630BD
112	VMX3115	MECHANISM SPACER (F)	[MAV]
113	VMX3229	MECHANISM SPACER (R)	[MAV]
114	VMZ3237	BARRIER	[MAV]
115	VKA0364	FOOT	[MAV]
116	VKA0364	FOOT	[MAV]

Ref. No.	Part No.	Part Name & Description	Remarks
118	VWJ050W120BB	FLAT CARD CABLE (5P)	[MAV] P3001-P4951
119	VWJ060W165BB	FLAT CARD CABLE (6P)	[MAV] P4001-AC HEAD
120	VWJ070W210MM	FLAT CARD CABLE (7P)	[MAV] P2501-CYLINDER
121	VFJ1462	AC CORD STRAP	[MAV]
B101	VHD1094	SCREW	NV-FJ630A/EA/AM/EU-S/AU/BD/BDX
B101	VHD1041	SCREW	NV-FJ630EU-K
B102	VHD1094	SCREW	NV-FJ630A/EA/AM/EU-S/AU/BD/BDX
B102	VHD1041	SCREW	NV-FJ630EU-K
B103	XSB3+5FC	SCREW	[MAV]
B104	XTB3+10JFC	SCREW	[MAV]
B105	XTB3+10JFC	SCREW	[MAV] NV-FJ630A/EA/AM/EU-S/AU/BD/BDX
B105	XTB3+10JFZ	SCREW	NV-FJ630EU-K
B106	XTB3+10JFC	SCREW	[MAV] NV-FJ630A/EA/AM/EU-S/AU/BD/BDX
B106	XTB3+10JFZ	SCREW	NV-FJ630EU-K
B107	XTN26+8JR	SCREW	[MAV]
B108	XTN26+8JR	SCREW	[MAV]
B109	XTW3+6TR	SCREW	[MAV]
B110	XTW3+6TR	SCREW	[MAV]
B111	XTW3+6TR	SCREW	[MAV]
B112	VHD1453	SCREW	[MAV]
B113	VHD1453	SCREW	[MAV]
B114	VHD1453	SCREW	[MAV]
B115	VHD1452	SCREW	[MAV]
B116	VHD1092	SCREW	
B117	XTV26+5FR	SCREW	[MAV]
B118	XTW3+6TR	SCREW	[MAV]

11.3. PACKING PARTS SECTION PARTS LIST

Note. 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. " [MAV] " in the Remarks column shows that the parts is/are supplied from MAV.

Ref. No.	Part No.	Part Name & Description	Remarks
201	VQT9648	OPERATING INSTRUCTIONS (ENGLISH)	⚠ [MAV] NV-FJ630A/EA
201	VQT9649	OPERATING INSTRUCTIONS (ENGLISH/ ARABIC)	⚠ [MAV] NV-FJ630AM(FOR EXCEPT MALAYSIA)
201	VQT9650	OPERATING INSTRUCTIONS (ENGLISH)	⚠ [MAV] NV-FJ630AM(FOR MALAYSIA)
201	VQT9651	OPERATING INSTRUCTIONS (ENGLISH/ RUSSIAN)	⚠ [MAV] NV-FJ630EU-S/EU-K/AU
201	VQT9652	OPERATING INSTRUCTIONS (ENGLISH/ CANTONESE)	⚠ [MAV] NV-FJ630BD
201	VQT9653	OPERATING INSTRUCTIONS (ENGLISH)	⚠ [MAV] NV-FJ630BDX
202	N2QAKB000031	REMOTE CONTROLLER	[MAV]
203	R0186-720010	BATTERY COVER	[MAV]
204	VJA1124	DIN RF CABLE	NV-FJ630A/EA/AM/BD/BDX
204	VJA1089	DIN RF CABLE	NV-FJ630EU-S/EU-K/AU K1TWACC00001
205	VJP2974	AC PLUG ADAPTER	⚠ NV-FJ630AM(FOR MIDDLE EAST)/NV-FJ630BDX K2DA42E00001
206	K2KA6BA00003	PHONE CABLE	[MAV]
207	VPN5766	ACCESSORY PAD	[MAV]
208	VPN5712	CUSHION (L)	[MAV]
209	VPN5713	CUSHION (R)	[MAV]
210	VPG0N18	PACKING	[MAV] NV-FJ630A
210	VPG0N19	PACKING	[MAV] NV-FJ630EA
210	VPG0N20	PACKING	[MAV] NV-FJ630AM(FOR EXCEPT MALAYSIA AND MIDDLE EAST)
210	VPG0N21	PACKING	[MAV] NV-FJ630AM(FOR MIDDLE EAST)
210	VPG0N22	PACKING	[MAV] NV-FJ630AM(FOR MALAYSIA)
210	VPG0N24	PACKING	[MAV] NV-FJ630EU-S
210	VPG0N25	PACKING	[MAV] NV-FJ630EU-K
210	VPG0N23	PACKING	[MAV] NV-FJ630AU
210	VPG0N26	PACKING	[MAV] NV-FJ630BD
210	VPG0N27	PACKING	[MAV] NV-FJ630BDX
		SERVICE FIXTURES & TOOLS	
	VFJ8125H3F	VHS ALIGNMENT TAPE (PAL)	
	VFK0335	RETAINING RING REMOVER (3mm/4mm)	
	VFK0329	POST ADJUSTMENT SCREWDRIVER	
	VFK0326	HEX WRENCH SET	
	VFK0132	BACK TENSION METER	
	VFK27	HEAD CLEANING STICK	
	VFK1024	MOLYTONE GREASE	
	VFK0330	FINE ADJUSTMENT GEAR DRIVER	
	VFK1301	SILICONE GREASE	
	VFK1298A	FLOIL GREASE	

11.4. ELECTRICAL PARTS LIST

Note. 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "■" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.
6. " [MAV] " in the Remarks column shows that the parts is/are supplied from MAV.
7. " *1 ", " *2 ", " *3 ", " *4 " *5 " *6 " in the Remarks column shows the models as follows.
" *1 ": NV-FJ730A
" *2 ": NV-FJ730EA
" *3 ": NV-FJ735AM
" *4 ": NV-FJ730D/BDX
" *5 ": NV-FJ630AU
" *6 ": NV-FJ630BD/BDX

Ref. No.	Part No.	Part Name & Description	Remarks
■	VEP06E44L	MAIN C.B.A.	(RTL)[MAV] *1
			THE FOLLOWING C.B.A.S ARE INCLUDED IN MAIN C.B.A.
			VEP04794A,VEP07A16B.
■	VEP06E44M	MAIN C.B.A.	(RTL)[MAV] *2
			THE FOLLOWING C.B.A.S ARE INCLUDED IN MAIN C.B.A.
			VEP04794A,VEP07A18U.
■	VEP06E44N	MAIN C.B.A.	(RTL)[MAV] *3
			THE FOLLOWING C.B.A. IS INCLUDED IN MAIN C.B.A.
			VEP04794A.
■	VEP06E44P	MAIN C.B.A.	(RTL)[MAV] *4
			THE FOLLOWING C.B.A. IS INCLUDED IN MAIN C.B.A.
			VEP04794C.
■	VEP06E44Q	MAIN C.B.A.	(RTL)[MAV] *5
			THE FOLLOWING C.B.A. IS INCLUDED IN MAIN C.B.A.
			VEP04794C.
■	VEP06E44R	MAIN C.B.A.	(RTL)[MAV] *6
			THE FOLLOWING C.B.A.S ARE INCLUDED IN MAIN C.B.A.
			VEP04794A,VEP07A18W.
■	VEP07A16B	DECODER PACK C.B.A.	(RTL)[MAV] *1
			INCLUDED IN MAIN C.B.A.(VEP06E44L).
■	VEP07A18U	NICAM DECODER PACK C.B.A.	(RTL)[MAV] *2
			INCLUDED IN MAIN C.B.A.(VEP06E44M).
■	VEP07A18W	NICAM DECODER PACK C.B.A.	(RTL)[MAV] *6
			INCLUDED IN MAIN C.B.A.(VEP06E44R).
■	VEP04794A	FRONT C.B.A.	(RTL)[MAV] *1,*2,*3,*6
			INCLUDED IN MAIN C.B.A.(VEP06E44L/M/N/R).
■	VEP04794C	FRONT C.B.A.	(RTL)[MAV] *4,*5
			INCLUDED IN MAIN C.B.A.(VEP06E44P/Q).
■	VEP06E44L	MAIN C.B.A.	(RTL)[MAV] *1
■	VEP06E44M	MAIN C.B.A.	(RTL)[MAV] *2
■	VEP06E44N	MAIN C.B.A.	(RTL)[MAV] *3

Ref. No.	Part No.	Part Name & Description	Remarks
■	VEP06E44P	MAIN C.B.A.	(RTL)[MAV] *4
■	VEP06E44Q	MAIN C.B.A.	(RTL)[MAV] *5
■	VEP06E44R	MAIN C.B.A.	(RTL)[MAV] *6
B6001	VSB0205	LITHIUM BATTERY	⚠
C1120	ECQU2A683MVA	P.CAPACITOR 250V 0.068U	⚠ *1,*2,*4,*5,*6
C1120	ECQU2A333MVA	P.CAPACITOR 250V 0.033U	⚠ *3
C1121	VCK0286B331	CERAMIC CAPACITOR	⚠ F1BAF331A013
C1123	F1BAF1020020	CERAMIC CAPACITOR	⚠ [MAV]
C1140	ECEC2GG680FZ	E.CAPACITOR 400V 68U	*3,*4,*5,*6
C1141	EEUEB2G330E	E.CAPACITOR 400V 33U	[MAV] *1,*2
C1151	ECQB1H473JM3	P.CAPACITOR 50V 0.047U	
C1152	ECQB1H103JZ	P.CAPACITOR 50V 0.01U	*1,*2,*4,*5,*6
C1153	ECQB1H104JM3	P.CAPACITOR 50V 0.1U	
C1154	ECQB1H223JM3	P.CAPACITOR 50V 0.022U	[MAV]
C1155	ECKN3A271KBP	C.CAPACITOR 1KV 270P	[MAV] *1,*2,*4,*5,*6
C1155	F1A3A331A029	CERAMIC CAPACITOR	[MAV] *3 F1A3A331A020
C1156	ECQB1H104JM3	P.CAPACITOR 50V 0.1U	*3
C1200	ECQB1H104JM3	P.CAPACITOR 50V 0.1U	
C1210	F1B3A332A004	E.CAPACITOR 1KV 3300U	[MAV] *1,*2,*4,*5,*6
C1230	F2A1H560A101	E.CAPACITOR 50V 56U	[MAV]
C1250	VCEA1CJH122E	E.CAPACITOR 16V 1200U	[MAV] *1,*2,*4,*5,*6
C1250	VCEA1EJH821	E.CAPACITOR 25V 820U	*3 F2A1E8210001
C1251	ECA1CM101	E.CAPACITOR 16V 100U	*1,*2,*4,*5,*6
C1251	ECA1EM101	E.CAPACITOR 25V 100U	*3
C1260	VCEA1AJH182E	E.CAPACITOR 10V 1800U	[MAV]
C1261	ECA1AM221	E.CAPACITOR 10V 220U	
C1270	F2A1H560A101	E.CAPACITOR 50V 56U	[MAV]
C1280	F2A1A101A089	E.CAPACITOR 10V 100U	[MAV]
C2001	ECEA1CKS100	E.CAPACITOR 16V 10U	
C2002	F1J1H392A614	E.CAPACITOR 50V 3900U	[MAV]
C2003	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C2004	F1J1H330A618	E.CAPACITOR 50V 33U	[MAV]
C2006	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C2012	ECUV1H681JCN	C.CAPACITOR CH 50V 680P	
C2013	ECA0JM331B	E.CAPACITOR 6.3V 330U	
C2015	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C2016	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C2051	ECEA0JKS220	E.CAPACITOR 6.3V 22U	
C2501	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C2502	ECEA1AKS221	E.CAPACITOR 10V 220U	
C2504	F1J1H223A614	E.CAPACITOR 50V 22000U	[MAV]
C2505	F1J1H223A614	E.CAPACITOR 50V 22000U	[MAV]
C2506	ECJ2VB1C224K	C.CAPACITOR CH 16V 0.22U	
C2507	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	ECJ2VB1H102K
C2508	ECUV1H182KBN	C.CAPACITOR CH 50V 1800P	ECJ2VB1H182K
C2509	ECEA1CKS220	E.CAPACITOR 16V 22U	
C2510	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C2511	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C2512	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C2513	ECJ2VF1C105Z	C.CAPACITOR CH 16V 1U	
C2514	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C2515	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	

Ref. No.	Part No.	Part Name & Description	Remarks
C2517	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C2518	ECJ2VF1C105Z	C.CAPACITOR CH 16V 1U	
C2520	ECJ2VB1E563K	C.CAPACITOR CH 25V 0.056U	
C2551	ECJ2VB1E563K	C.CAPACITOR CH 25V 0.056U	
C2552	ECJ2VB1E563K	C.CAPACITOR CH 25V 0.056U	
C2561	ECJ2VB1E563K	C.CAPACITOR CH 25V 0.056U	
C2571	ECA1CM221	E.CAPACITOR 16V 220U	*1,*2,*4,*5,*6
C2571	ECA1EM221	E.CAPACITOR 25V 220U	*3
C2572	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C2575	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C3001	ECEA1CKS100	E.CAPACITOR 16V 10U	
C3002	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C3003	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C3004	ECJ2VC1H121J	C.CAPACITOR CH 50V 120P	
C3006	ECUV1C154KBN	C.CAPACITOR CH 16V 0.15U	
C3007	ECUV1H390JCN	C.CAPACITOR CH 50V 39P	ECJ2VC1H390J
C3008	ECA0JM471G	E.CAPACITOR 6.3V 470U	
C3009	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3010	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3011	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3012	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3013	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3014	ECEA1EKS3R3	E.CAPACITOR 25V 3.3U	
C3015	ECEA1CKS100	E.CAPACITOR 16V 10U	
C3016	ECEA1HKS010	E.CAPACITOR 50V 1U	
C3017	ECEA1HKS2R2	E.CAPACITOR 50V 2.2U	
C3018	ECEA1HKS010	E.CAPACITOR 50V 1U	
C3019	ECEA1HKS010	E.CAPACITOR 50V 1U	
C3021	ECUV1H271JCN	C.CAPACITOR CH 50V 270P	ECJ2VC1H271J
C3022	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C3025	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3026	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3027	ECUV1H120JCN	C.CAPACITOR CH 50V 12P	ECJ2VC1H120J
C3028	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3029	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C3033	D0GDR00JA017	M.RESISTOR 0	[MAV]
C3034	ECEA1HKS010	E.CAPACITOR 50V 1U	*3,*4,*5,*6
C3035	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C3036	ECUV1C154KBN	C.CAPACITOR CH 16V 0.15U	
C3037	F1J1H223A614	E.CAPACITOR 50V 22000U	[MAV]
C3038	ECEA1HKAR47B	E.CAPACITOR 50V 0.47U	
C3039	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C3040	ECJ2VB1H472K	C.CAPACITOR CH 50V 4700P	[MAV]
C3041	F1J1H330A618	E.CAPACITOR 50V 33U	[MAV]
C3042	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C3043	ECEA1EKS3R3	E.CAPACITOR 25V 3.3U	
C3044	ECUV1H331JCN	C.CAPACITOR CH 50V 330P	ECJ2VC1H331J
C3045	ECUV1H030CCN	C.CAPACITOR CH 50V 3P	ECJ2VC1H030C
C3046	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C3050	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C3051	ECUV1H120JCN	C.CAPACITOR CH 50V 12P	ECJ2VC1H120J
C3052	F1J1H470A618	E.CAPACITOR 50V 47U	[MAV]
C3054	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C3055	ECUV1H100DCN	C.CAPACITOR CH 50V 10P	
C3058	ECUV1H070DCN	C.CAPACITOR CH 50V 7P	ECJ2VC1H070D
C3062	ECUV1H120JCN	C.CAPACITOR CH 50V 12P	ECJ2VC1H120J
C3063	ECUM1H222KBN	C.CAPACITOR CH 50V 2200P	

Ref. No.	Part No.	Part Name & Description	Remarks
C3065	F1J1H220A618	E.CAPACITOR 50V 22U	[MAV]
C3301	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3303	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C3304	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C3305	ECJ2VB1C224K	C.CAPACITOR CH 16V 0.22U	
C3307	ECJ2VB1C224K	C.CAPACITOR CH 16V 0.22U	
C3405	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	ECJ2VB1H102K
C4001	F1J1H682A614	E.CAPACITOR 50V 6800U	[MAV]
C4002	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4004	ECUV1H182KBN	C.CAPACITOR CH 50V 1800P	ECJ2VB1H182K
C4008	ECUM1H222KBN	C.CAPACITOR CH 50V 2200P	
C4011	ECEA1EKS3R3	E.CAPACITOR 25V 3.3U	
C4012	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C4013	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C4014	ECUV1H182KBN	C.CAPACITOR CH 50V 1800P	ECJ2VB1H182K
C4041	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C4042	ECEA1EKS4R7	E.CAPACITOR 25V 4.7U	
C4043	ECEA0JKS220	E.CAPACITOR 6.3V 22U	
C4051	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C4052	ECJ2VB1H471K	C.CAPACITOR CH 50V 470P	
C4054	ECQB1H682JM3	P.CAPACITOR 50V 6800P	
C4055	ECA1CM221	E.CAPACITOR 16V 220U	
C4056	F1J1H223A614	E.CAPACITOR 50V 22000U	[MAV]
C4057	ECUM1H152KBN	C.CAPACITOR CH 50V 1500P	ECJ2XB1H152K
C4058	ECQB1H223JM3	P.CAPACITOR 50V 0.022U	[MAV]
C4075	F1J1H101A618	E.CAPACITOR 50V 100U	[MAV] *4,*5
C4076	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV] *4,*5
C4077	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV] *4,*5
C4078	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV] *4,*5
C4081	ECEA1AKS221	E.CAPACITOR 10V 220U	*4,*5
C4082	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	*4,*5
C4083	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	*4,*5 ECJ2VB1H102K
C4101	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4502	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4503	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4504	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4505	ECEA0JKA330B	E.CAPACITOR 6.3V 33U	
C4506	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4507	ECEA0JKS220	E.CAPACITOR 6.3V 22U	
C4508	ECJ2VB1H333K	C.CAPACITOR CH 50V 0.033U	
C4509	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4510	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4511	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C4512	ECJ2VB1C224K	C.CAPACITOR CH 16V 0.22U	
C4513	ECEA0JKS220	E.CAPACITOR 6.3V 22U	
C4514	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4515	ECEA0JKA330B	E.CAPACITOR 6.3V 33U	
C4516	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4517	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C4519	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4520	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4521	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4522	ECEA0JKS220	E.CAPACITOR 6.3V 22U	
C4524	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C4525	ECEA1CKA470	E.CAPACITOR 16V 47U	
C4530	F1J1H151A618	E.CAPACITOR 50V 150U	[MAV]
C4531	F1J1H151A618	E.CAPACITOR 50V 150U	[MAV]

Ref. No.	Part No.	Part Name & Description	Remarks
C4534	ECQB1H153JM3	P.CAPACITOR 50V 0.015U	
C4535	ECQB1H153JM3	P.CAPACITOR 50V 0.015U	
C4536	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4538	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4581	ECQB1H473JM3	P.CAPACITOR 50V 0.047U	
C4582	ECQB1H473JM3	P.CAPACITOR 50V 0.047U	
C4601	ECEA1CKS100	E.CAPACITOR 16V 10U	
C4603	ECUM1H152KBN	C.CAPACITOR CH 50V 1500P	ECJ2XB1H152K
C4604	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4681	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4683	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C4684	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C4901	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV] *4,*5
C4902	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV] *4,*5
C5001	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5002	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5003	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5004	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5005	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5006	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5007	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5008	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	ECJ2VB1H103K
C5009	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C5010	ECUV1E104KBN	C.CAPACITOR CH 25V 0.1U	F1J1E1040007
C5051	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C6001	ECUV1H270JCN	C.CAPACITOR CH 50V 27P	ECJ2VC1H270J
C6002	F1J1H220A618	E.CAPACITOR 50V 22U	[MAV]
C6003	ECUV1H120JCN	C.CAPACITOR CH 50V 12P	ECJ2VC1H120J
C6004	ECUV1H150JCN	C.CAPACITOR CH 50V 15P	[MAV]ECJ2VC1H150J
C6005	ECUV1H221JCN	C.CAPACITOR CH 50V 220P	ECJ2VC1H221J
C6006	ECUV1H221JCN	C.CAPACITOR CH 50V 220P	ECJ2VC1H221J
C6007	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C6009	ECEA1EKS3R3	E.CAPACITOR 25V 3.3U	
C6010	F1J1H470A618	E.CAPACITOR 50V 47U	[MAV]
C6011	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C6012	F1J1H470A618	E.CAPACITOR 50V 47U	[MAV]
C6013	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C6014	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	ECJ2VB1H102K
C6018	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C6019	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C6020	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C6021	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C7301	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2VB1H103K
C7301	ECJ1VF1H103Z	C.CAPACITOR CH 50V 0.01U	*2,*6
C7302	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7303	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7304	ECUV1H681JCN	C.CAPACITOR CH 50V 680P	*1
C7304	F2A0J1010027	E.CAPACITOR 6.3V 100U	*2,*6
C7305	ECUX1H123KBN	C.CAPACITOR CH 50V 0.012U	*1
C7306	ECUX1H123KBN	C.CAPACITOR CH 50V 0.012U	*1
C7307	ECUV1H681JCN	C.CAPACITOR CH 50V 680P	*1
C7307	ECJ1VF1H103Z	C.CAPACITOR CH 50V 0.01U	*2,*6
C7308	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7308	ECEA1HKS2R2	E.CAPACITOR 50V 2.2U	*2,*6
C7309	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2VB1H103K
C7310	ECUV1H103KBN	C.CAPACITOR CH 50V 0.01U	*1 ECJ2VB1H103K
C7311	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	*2,*6

Ref. No.	Part No.	Part Name & Description	Remarks
C7312	ECEA1CKS100	E.CAPACITOR 16V 10U	*1
C7312	ECJ1VC1H220J	C.CAPACITOR CH 50V 22P	*2,*6
C7313	ECEA1CKS100	E.CAPACITOR 16V 10U	*1
C7313	ECJ1VF1C104Z	C.CAPACITOR CH 16V 0.1U	*2,*6
C7315	ECJ2VB1E104K	C.CAPACITOR CH 25V 0.1U	*2,*6
C7316	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	*1
C7316	ECJ1VF1C104Z	C.CAPACITOR CH 16V 0.1U	*2,*6
C7317	ECEA0JKS101	E.CAPACITOR 6.3V 100U	*1
C7317	F2A1C100A009	E.CAPACITOR 16V 10U	*2,*6
C7318	ECEA1CKS100	E.CAPACITOR 16V 10U	*1
C7318	F2A0J470A011	E.CAPACITOR 6.3V 47U	*2,*6
C7319	ECEA1CKA470	E.CAPACITOR 16V 47U	*1
C7319	F2A1C100A009	E.CAPACITOR 16V 10U	*2,*6
C7320	ECJ2VB1H472K	C.CAPACITOR CH 50V 4700P	[MAV] *1
C7320	F2A1C100A009	E.CAPACITOR 16V 10U	*2,*6
C7321	ECEA1HKAR47B	E.CAPACITOR 50V 0.47U	*1
C7322	ECEA1HKNR47B	E.CAPACITOR 50V 0.47U	*1
C7323	ECJ2YB1H104K	C.CAPACITOR CH 50V 0.1U	[MAV] *1
C7324	ECJ1VF1C104Z	C.CAPACITOR CH 16V 0.1U	*2,*6
C7325	ECJ1VF1C104Z	C.CAPACITOR CH 16V 0.1U	*2,*6
C7326	ECUM1H152KBM	C.CAPACITOR CH 50V 1500P	*1
C7327	ECUM1H152KBM	C.CAPACITOR CH 50V 1500P	*1
C7328	ECUM1H152KBM	C.CAPACITOR CH 50V 1500P	*1
C7341	ECJ1VB1H472K	C.CAPACITOR CH 50V 4700P	*2,*6
C7342	ECJ1VB1H472K	C.CAPACITOR CH 50V 4700P	*2,*6
C7343	ECJ1VB1H222K	C.CAPACITOR CH 50V 2200P	*2,*6
C7501	ECUV1H120JCN	C.CAPACITOR CH 50V 12P	ECJ2VC1H120J
C7502	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C7503	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C7504	ECEA0JKS101	E.CAPACITOR 6.3V 100U	
C7505	ECEA1VKA100B	E.CAPACITOR 35V 10U	
C7601	ECEA1HKS010	E.CAPACITOR 50V 1U	
C7605	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C7606	F1J1H330A618	E.CAPACITOR 50V 33U	[MAV]
C7607	F1J1H330A618	E.CAPACITOR 50V 33U	[MAV]
C7608	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C7610	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	ECJ2VB1H102K
C7616	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C7617	ECEA0JKS470	E.CAPACITOR 6.3V 47U	
C7618	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C7627	ECUV1C224ZFN	C.CAPACITOR CH 16V 0.22U	ECJ2VF1C224Z
C7701	ECJ2VB1H333K	C.CAPACITOR CH 50V 0.033U	
C7702	ECJ2VF1H104Z	C.CAPACITOR CH 50V 0.1U	
C7704	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C7705	ECJ2VF1H103Z	C.CAPACITOR CH 50V 0.01U	
C7706	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV]
C7707	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	ECJ2VB1H102K
C7708	F1J1H471A618	E.CAPACITOR 50V 470U	[MAV] *1,*2,*3,*4,*5
C7708	ECUV1H681JCN	C.CAPACITOR CH 50V 680P	*6
C7709	ECUV1H182KBN	C.CAPACITOR CH 50V 1800P	*1,*2,*3,*4,*5 ECJ2VB1H182K
C7709	ECUM1H152KBN	C.CAPACITOR CH 50V 1500P	*6 ECJ2XB1H152K
C7710	ECJ2VF1C105Z	C.CAPACITOR CH 16V 1U	
C7711	ECUV1H102KBN	C.CAPACITOR CH 50V 1000P	ECJ2VB1H102K
C7712	F1J1H101A618	E.CAPACITOR 50V 100U	[MAV]
C7713	ECUV1H820JCN	C.CAPACITOR CH 50V 82P	ECJ2VC1H820J
C7714	F1J1H101A618	E.CAPACITOR 50V 100U	[MAV] *3,*4,*5,*6

Ref. No.	Part No.	Part Name & Description	Remarks
D1110	ERZVA5Z471	TRANSIENT/SURGE ABSORBER	⚠
D1140	DF08S-6622	DIODE	B0KB00000013
D1150	AU01Z	DIODE	B0HAGM000006
D1152	MA2C18500E	DIODE	⚠ [MAV] *1,*2,*4,*5,*6
D1155	MA2C165001VT	DIODE	
D1157	MAZ40270LF	DIODE	[MAV]
D1158	MA2C18500E	DIODE	⚠ [MAV] *3
D1159	MA2C18500E	DIODE	⚠ [MAV] *3
D1180	MA7510-TR	DIODE	[MAV]
D1230	MA2C18500E	DIODE	⚠ [MAV]
D1250	AK09V2	DIODE	[MAV] *1,*2,*4,*5,*6
D1250	AK06	DIODE	[MAV] *3 B0JAME000038
D1251	AK09V2	DIODE	[MAV] *1,*2,*4,*5,*6
D1251	AK06	DIODE	[MAV] *3 B0JAME000038
D1260	AK04	DIODE	⚠ B0JAME000037
D1261	AK04	DIODE	⚠ B0JAME000037
D1270	MA2C18500E	DIODE	⚠ [MAV]
D1280	AK04	DIODE	⚠ B0JAME000037
D1501	B3EA00000072	LED	[MAV]
D2001	MA2C165001VT	DIODE	
D2002	MA2C165001VT	DIODE	
D2501	MA4130N-L	DIODE	MAZ4130NL
D2503	MAZ4160NMF	DIODE	[MAV]
D3002	B0JACE000001	DIODE	
D4501	MA2C165001VT	DIODE	
D4682	MA4056N-H	DIODE	MAZ4056NH
D6001	MA2C165001VT	DIODE	
D6002	MA4056N-H	DIODE	MAZ4056NH
D6003	MA700A	DIODE	MA2C700A
D6005	MA2C165001VT	DIODE	
D7502	MAZ4220N0F	DIODE	[MAV]
D7602	MAZ4300NMF	DIODE	
DP7501	A2BD00000049	DISPLAY TUBE	[MAV]
F1101	K5D162BK0005	FUSE	⚠
FL7301	VLF0633	FILTER	*2,*6 J0HACK000008
IC1200	UPC1093J	IC	C0DAEMC00002
IC1501	B3NAA0000049	IC	[MAV]
IC1502	B3NAA0000049	IC	[MAV]
IC2001	C0DBCHD00002	IC	
IC2501	C1AB00001479	IC	[MAV]
IC3001	C1AB00001298	IC	
IC4501	AN3656NFBPBV	IC	
IC6001	C2CBHF000204	IC	[MAV] *1,*2
IC6001	C2CBHF000201	IC	[MAV] *3,*6
IC6001	C2CBHF000202	IC	[MAV] *4,*5
IC6002	C0EBH0000218	IC	[MAV]
IC6003	PNA4618M09	IR RECEIVER UNIT	[MAV]
IC7301	C0ZBZ0000580	IC	[MAV] *1
IC7301	TDA9874AH	IC	*2,*6 C1AB00001404

Ref. No.	Part No.	Part Name & Description	Remarks
IC7302	PST7043	IC	*2,*6 C0EAH0000051
IC7501	M35502AFP	IC	
J1	VEE0T78	EARTH WIRE	[MAV]
JK3002	VJJ0675	PIN JACK 3-PIN	K2HA612B0027
JK4951	K2HA307A0003	JACK	[MAV]
K3003	D0GDR00JA017	M.RESISTOR 0	[MAV]
K4051	D0GDR00JA017	M.RESISTOR 0	[MAV]
K6004	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
K7301	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*1,*2,*6 D0GBR00JA017
K7302	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2,*6 D0GBR00JA017
K7303	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2,*6 D0GBR00JA017
L1120	VLF1498G0R5	FILTER	⚠ [MAV] *1,*2,*4,*5,*6
L1120	ELF15N003A	LINE FILTER	⚠ *3
L1121	VLF1498G0R5	FILTER	⚠ [MAV] *1,*2,*4,*5,*6
L1250	G0A220G00018	COIL	G0A220G00019
L1260	G0A220G00018	COIL	G0A220G00019
L3002	VLQ0599J391	COIL 390UH	G0C391JA0026
L3005	VLQ0822J680	COIL 68UH	[MAV]
L3006	G0C120JA0019	INDUCTOR	
L3008	VLQ0599J180	COIL 18UH	G0C180JA0026
L3009	VLQ0599J390	COIL 39UH	G0C390JA0026
L3301	VLQ0822J330	COIL 33UH	[MAV]
L3302	VLQ0822J680	COIL 68UH	[MAV]
L3303	VLQ0822J680	COIL 68UH	[MAV]
L4051	ELESN471KA	INDUCTOR	
L4501	VLQ0599J1R2	COIL 1.2UH	G0C1R2JA0026
L5001	VLQ0822J680	COIL 68UH	[MAV]
L7302	G0C1R0JA0019	INDUCTOR	*2,*6
L7601	VLQ0822J100	COIL 10UH	[MAV]
L7602	VLQ0822J100	COIL 10UH	[MAV] *2,*6
L7604	VLQ0599J2R2	COIL 2.2UH	*2,*6 G0C2R2JA0026
L7605	VLQ0822J100	COIL 10UH	[MAV]
L7608	VLQ0822J270	COIL 27UH	[MAV] *1,*2,*3,*4,*5
L7608	VLQ0822J330	COIL 33UH	[MAV] *6
L7701	VLQ0599J5R6	COIL 5.6UH	G0C5R6JA0026
L7702	G0C100JA0019	INDUCTOR	[MAV] *3,*4,*5,*6
LB1120	J0JKB0000028	FILTER	J0JKB0000027
LB1210	J0JKB0000028	FILTER	*3 J0JKB0000027
LB1211	VLP0321A300	CHIP INDUCTOR	*3
LB4073	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
LB4073	J0JBC0000041	FILTER	⚠ [MAV] *4,*5
LB4074	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
LB4074	J0JBC0000041	FILTER	⚠ [MAV] *4,*5
LB4077	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
LB4077	J0JBC0000070	FILTER	[MAV] *4,*5
LB4078	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
LB4078	J0JBC0000070	FILTER	[MAV] *4,*5
LB4561	D0GDR00JA017	M.RESISTOR 0	[MAV]
LB4562	D0GDR00JA017	M.RESISTOR 0	[MAV]
LB4901	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6

Ref. No.	Part No.	Part Name & Description	Remarks
LB4901	J0JBC0000041	FILTER	⚠ [MAV] *4,*5
LB4902	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
LB4902	J0JBC0000041	FILTER	⚠ [MAV] *4,*5
LB7301	VLP0150	COIL	*2,*6 J0JCC0000021
LB7303	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*2,*6 D0GBR00JA017
LB7601	D0GDR00JA017	M.RESISTOR 0	[MAV]
LR1150	J1ZZA0000001	FILTER	
P1102	K1KA02A00104	CONNECTOR	
P1531	K1KA02A00375	CONNECTOR	[MAV]
P2501	VJS3538A007W	CONNECTOR (FEMALE) 7P	[MAV]
P2571	K1KA08A00290	CONNECTOR	[MAV]
P3001	VJS3538A005W	CONNECTOR (FEMALE) 5P	[MAV]
P4001	VJS3538A006W	CONNECTOR (FEMALE) 6P	[MAV]
P4002	K1MZ02A00003	CONNECTOR	[MAV]
P4951	VJS3537B005G	CONNECTOR (FEMALE) 5P	K1MN05B00039
P5001	VJS3537A010G	CONNECTOR (FEMALE) 10P	K1MN10A00036
PK7301	VJR0777B007W	CONNECTOR (MALE) 7P	*1,*2,*6 K1MM07B00002
PK7302	VJR0777B006W	CONNECTOR (MALE) 6P	*1,*2,*6 K1MM06B00002
Q1150	B1DEDR000003	TRANSISTOR	*1,*2,*4,*5,*6
Q1150	B1DADT000002	TRANSISTOR	[MAV] *3
Q1151	2SD1992A-R	TRANSISTOR	
Q1152	2SC3311ASA	TRANSISTOR	
Q1153	FS5KM-10A-AW	FET	[MAV] *1,*2,*4,*5,*6
Q1200	PS2561L2-1WL	TRANSISTOR	⚠
Q1501	PNA2604M01	PHOTO COUPLER	[MAV]
Q1502	PNA2604M01	PHOTO COUPLER	[MAV]
Q2002	2SD601A-R	TRANSISTOR	2SD0601AR
Q2501	2SD1273P	TRANSISTOR	2SD12730P
Q3004	2SB709A	TRANSISTOR	2SB0709A
Q3005	2SD601A-R	TRANSISTOR	2SD0601AR
Q3007	2SD132800L	TRANSISTOR	
Q3008	2SC2295	TRANSISTOR	
Q3009	2SB709A	TRANSISTOR	2SB0709A
Q3010	2SC1959-Y	TRANSISTOR	
Q4003	2SD1149	TRANSISTOR	
Q4004	2SD601A-R	TRANSISTOR	2SD0601AR
Q4051	2SB0710A0L	TRANSISTOR	
Q4052	2SD602A-R	TRANSISTOR	2SD0602AR
Q4053	2SD1328-R	TRANSISTOR	2SD13280R
Q4054	2SD1328-R	TRANSISTOR	2SD13280R
Q4101	2SD1996	TRANSISTOR	2SD199606A
Q4681	2SC1959-Y	TRANSISTOR	
Q4682	2SC1959-Y	TRANSISTOR	
Q4683	2SC1959-Y	TRANSISTOR	
Q6001	2SD601A-R	TRANSISTOR	2SD0601AR
Q6002	2SD601A-R	TRANSISTOR	2SD0601AR
Q6003	2SD601A-R	TRANSISTOR	2SD0601AR
Q7602	2SC1959-Y	TRANSISTOR	
Q7701	2SB709A	TRANSISTOR	*3,*4,*5,*6 2SB0709A
QR3003	UNR221300L	TRANSISTOR RESISTOR	
QR3009	UNR221300L	TRANSISTOR RESISTOR	

Ref. No.	Part No.	Part Name & Description	Remarks
QR3010	UNR221300L	TRANSISTOR RESISTOR	
QR3011	UNR221300L	TRANSISTOR RESISTOR	
QR3012	UNR221300L	TRANSISTOR RESISTOR	
QR3150	UNR221300L	TRANSISTOR RESISTOR	
QR4001	UN2111	TRANSISTOR	UNR211100L
QR4003	UNR221100L	TRANSISTOR RESISTOR	
QR4101	UN2111	TRANSISTOR	UNR211100L
QR4102	UNR221300L	TRANSISTOR RESISTOR	
QR4103	UN2111	TRANSISTOR	UNR211100L
QR4104	UNR221300L	TRANSISTOR RESISTOR	
QR4501	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR4504	UN2115TW	TRANSISTOR	UNR211500L
QR4505	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR4506	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR4651	UN2215	TRANSISTOR-RESISTOR	UNR2215
QR6002	UNR211200L	TRANSISTOR RESISTOR	[MAV]
R1150	ERDS2TJ105T	C.RESISTOR 1/4W 1M	
R1153	ERG2SJ331	M.RESISTOR 2W 330	
R1154	ERDS2TJ105T	C.RESISTOR 1/4W 1M	
R1155	ERDS2FJ104	C.RESISTOR 1/4W 100K	
R1156	ERDS2FJ330	C.RESISTOR 1/4W 33	*1,*2,*4,*5,*6
R1156	ERDS2FJ331	C.RESISTOR 1/4W 330	*3
R1157	ER0S2CHF1601	M.RESISTOR 1/4W 1.6K	[MAV] *1,*2,*4,*5,*6
R1157	ER0S2CHF1501	M.RESISTOR 1/4W 1.5K	[MAV] *3
R1158	ERDS2FJ331	C.RESISTOR 1/4W 330	
R1159	ERDS2FJ3R3	C.RESISTOR 1/4W 3.3	*1,*2,*4,*5,*6
R1160	ERX1SJR47	M.RESISTOR 1W 0.47	*1,*2,*4,*5,*6
R1160	ERX1SJR33	M.RESISTOR 1W 0.33	*3
R1161	ERDS2FJ101	C.RESISTOR 1/4W 100	
R1162	ERDS2FJ102	C.RESISTOR 1/4W 1K	*1,*2,*4,*5,*6
R1163	ERDS2FJ101	C.RESISTOR 1/4W 100	*1,*2,*4,*5,*6
R1200	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	*1,*2,*4,*5,*6
R1200	ERJ6GEYG273V	M.RESISTOR CH 1/10W 27K	*3
R1202	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R1203	ERJ6GEYG243	M.RESISTOR CH 1/10W 24K	*1,*2,*4,*5,*6
R1203	ERJ6GEYG303	M.RESISTOR CH 1/10W 30K	*3
R1204	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	*1,*2,*4,*5,*6
R1204	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	*3
R1205	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R1206	ERJ6GEYG271	M.RESISTOR CH 1/10W 270	
R1207	ERJ6GEYG273V	M.RESISTOR CH 1/10W 27K	*3
R1208	ERJ6GEYG273V	M.RESISTOR CH 1/10W 27K	*3
R1209	ERJ6GEYG273V	M.RESISTOR CH 1/10W 27K	*3
R2001	ERJ6GEYG105	M.RESISTOR CH 1/10W 1M	
R2006	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	
R2501	ERJ6GEYJ1R2	M.RESISTOR CH 1/10W 1.2	
R2502	ERJ6GEYJ1R5	M.RESISTOR CH 1/10W 1.5	[MAV]
R2503	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R2504	ERDS2TJ682T	C.RESISTOR 1/4W 6.8K	
R2505	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R2506	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R2507	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R2508	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R2509	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R2510	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R2514	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	

Ref. No.	Part No.	Part Name & Description	Remarks
R2515	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R2519	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R2520	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	
R2521	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R2552	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R2562	ERJ6GEYF473	M.RESISTOR CH 1/10W 47K	
R3001	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	
R3002	D0GDR00JA017	M.RESISTOR 0	[MAV]
R3003	ERJ6GEYG152	M.RESISTOR CH 1/10W 1.5K	
R3004	ERJ6GEYJ475	M.RESISTOR CH 1/10W 4.7M	
R3007	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R3008	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R3009	ERJ6GEYJ750	M.RESISTOR CH 1/10W 75	
R3015	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R3016	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R3017	ERJ6GEYG680	M.RESISTOR CH 1/10W 68	
R3021	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R3022	ERJ6GEYF561	M.RESISTOR CH 1/10W 560	
R3024	ERDS2FJ681	C.RESISTOR 1/4W 680	
R3025	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R3028	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R3029	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	*1,*2
R3030	D0GDR00JA017	M.RESISTOR 0	[MAV]
R3031	ERJ6GEYF473	M.RESISTOR CH 1/10W 47K	
R3032	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R3033	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R3034	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R3035	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R3037	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	
R3044	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R3045	ERJ6GEYJ750	M.RESISTOR CH 1/10W 75	
R3046	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R3047	ERJ6GEYJ335	M.RESISTOR CH 1/10W 3.3M	
R3048	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R3049	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R3050	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R3150	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R3502	ERJ6GEYG152	M.RESISTOR CH 1/10W 1.5K	
R4001	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R4002	ERJ6GEYJ474V	M.RESISTOR CH 1/10W 470K	
R4009	D0GDR00JA017	M.RESISTOR 0	[MAV]
R4010	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R4011	ERJ6GEYJ124V	M.RESISTOR CH 1/10W 120K	
R4012	ERJ6GEYJ511	M.RESISTOR CH 1/10W 510	
R4013	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R4014	D0GDR00JA017	M.RESISTOR 0	[MAV]
R4015	ERJ6GEYF473	M.RESISTOR CH 1/10W 47K	
R4018	ERJ6GEYJ153V	M.RESISTOR CH 1/10W 15K	
R4037	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4038	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4039	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R4044	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	
R4051	ERJ6GEYJ302V	M.RESISTOR CH 1/10W 3K	
R4052	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R4053	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R4054	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R4055	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	

Ref. No.	Part No.	Part Name & Description	Remarks
R4056	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R4057	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R4073	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
R4073	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	*4,*5
R4074	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
R4074	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	*4,*5
R4075	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R4076	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R4101	ERJ6GEYJ4R7V	M.RESISTOR CH 1/10W 4.7	
R4102	ERDS2FJ102	C.RESISTOR 1/4W 1K	
R4103	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R4500	D0GDR00JA017	M.RESISTOR 0	[MAV]
R4502	ERJ6GEYJ513	M.RESISTOR CH 1/10W 51K	
R4503	ERJ6GEYJ513	M.RESISTOR CH 1/10W 51K	
R4505	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R4506	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R4508	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R4509	ERJ6GEYJ513	M.RESISTOR CH 1/10W 51K	
R4510	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R4511	ERJ6GEYJ513	M.RESISTOR CH 1/10W 51K	
R4512	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R4527	ERJ6GEYG681	M.RESISTOR CH 1/10W 680	
R4530	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R4532	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	
R4534	ERJ6GEYJ124V	M.RESISTOR CH 1/10W 120K	
R4538	ERJ6GEYF333	M.RESISTOR CH 1/10W 33K	
R4539	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R4540	ERJ6GEYG331	M.RESISTOR CH 1/10W 330	
R4541	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R4542	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	
R4581	ERJ6GEYF333	M.RESISTOR CH 1/10W 33K	
R4582	ERJ6GEYF333	M.RESISTOR CH 1/10W 33K	
R4583	ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	
R4584	ERJ6GEYJ563	M.RESISTOR CH 1/10W 56K	
R4585	ERJ6GEYJ511	M.RESISTOR CH 1/10W 510	
R4586	ERJ6GEYJ511	M.RESISTOR CH 1/10W 510	
R4601	ERJ6GEYJ223	M.RESISTOR CH 1/10W 22K	
R4602	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	
R4603	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R4651	ERJ6GEYG681	M.RESISTOR CH 1/10W 680	
R4682	ERDS2FJ471	C.RESISTOR 1/4W 470	
R4901	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
R4901	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	*4,*5
R4902	D0GDR00JA017	M.RESISTOR 0	[MAV] *1,*2,*3,*6
R4902	ERJ6GEYJ471	M.RESISTOR CH 1/10W 470	*4,*5
R6001	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6002	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R6003	ERJ6GEYG154	M.RESISTOR CH 1/10W 150K	
R6005	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6006	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6007	D0GDR00JA017	M.RESISTOR 0	[MAV]
R6008	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R6009	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	
R6010	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R6011	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6012	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6013	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	

Ref. No.	Part No.	Part Name & Description	Remarks
R6014	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R6015	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R6016	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R6017	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6018	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6019	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R6020	ERJ6GEYG183	M.RESISTOR CH 1/10W 18K	*1,*2,*4,*5
R6020	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	*3,*6
R6021	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	*2,*5,*6
R6022	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	*1,*2,*3,*4,*6
R6023	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	
R6024	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R6025	ERDS2FJ471	C.RESISTOR 1/4W 470	
R6026	ERDS2FJ471	C.RESISTOR 1/4W 470	
R6027	ERDS2FJ471	C.RESISTOR 1/4W 470	
R6028	ERJ6GEYF822	M.RESISTOR CH 1/10W 8.2K	
R6029	ERDS2FJ151	C.RESISTOR 1/4W 150	
R6030	ERJ6GEYJ121V	M.RESISTOR CH 1/10W 120	D0GD121JA003
R6031	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R6032	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R6033	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R6034	ERJ6GEYJ273	M.RESISTOR CH 1/10W 27K	
R6035	ERJ6GEYG182	M.RESISTOR CH 1/10W 1.8K	
R6037	ERJ6GEYG103	M.RESISTOR CH 1/10W 10K	
R6038	ERJ6GEYG223V	M.RESISTOR CH 1/10W 22K	
R6039	ERJ6GEYG104	M.RESISTOR CH 1/10W 100K	
R7301	ERJ6GEY0R00V	M.RESISTOR CH 1/10W 0	*1 D0GBR00JA017
R7302	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	*2,*6
R7304	ERJ6GEYJ472V	M.RESISTOR CH 1/10W 4.7K	*1
R7305	ERJ6GEYG912	M.RESISTOR CH 1/10W 9.1K	*1
R7305	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*2,*6
R7306	ERJ6GEYG562	M.RESISTOR CH 1/10W 5.6K	*1
R7306	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*2,*6
R7307	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	*1
R7308	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	*1
R7309	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	*1
R7311	ERJ6GEYJ752	M.RESISTOR CH 1/10W 7.5K	*1
R7312	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*1
R7313	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*1
R7314	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	*1
R7315	ERJ6GEYG432	M.RESISTOR CH 1/10W 4.3K	*1
R7316	ERJ6GEYG682	M.RESISTOR CH 1/10W 6.8K	*1
R7316	ERJ3GEYJ103	M.RESISTOR CH 1/16W 10K	*2,*6
R7317	ERJ6GEYG432	M.RESISTOR CH 1/10W 4.3K	*1
R7318	ERJ6GEYG432	M.RESISTOR CH 1/10W 4.3K	*1
R7319	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	*1
R7320	ERJ6GEYG332	M.RESISTOR CH 1/10W 3.3K	*1
R7324	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	*2,*6
R7325	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	*2,*6
R7327	ERJ3GEYJ822V	M.RESISTOR CH 1/16W 8.2K	*2,*6 D0GB822JA002
R7328	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	*2,*6
R7329	ERJ3GEYJ221	M.RESISTOR CH 1/16W 220	*2,*6
R7501	ERJ6GEYG154	M.RESISTOR CH 1/10W 150K	
R7502	ERJ6GEYG912	M.RESISTOR CH 1/10W 9.1K	
R7503	ERJ6GEYJ362	M.RESISTOR CH 1/10W 3.6K	
R7504	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R7505	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	

Ref. No.	Part No.	Part Name & Description	Remarks
R7506	ERJ6GEYF123	M.RESISTOR CH 1/10W 12K	
R7507	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R7508	ERJ6GEYG221	M.RESISTOR CH 1/10W 220	
R7509	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R7510	ERDS2FJ821	C.RESISTOR 1/4W 820	
R7512	ERDS2FJ220	C.RESISTOR 1/4W 22	
R7513	ERJ6GEYG182	M.RESISTOR CH 1/10W 1.8K	
R7514	ERJ6GEYG182	M.RESISTOR CH 1/10W 1.8K	
R7517	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	
R7518	ERJ6GEYJ512	M.RESISTOR CH 1/10W 5.1K	
R7519	ERJ6GEYJ362	M.RESISTOR CH 1/10W 3.6K	
R7520	ERJ6GEYJ512	M.RESISTOR CH 1/10W 5.1K	
R7521	ERJ6GEYG154	M.RESISTOR CH 1/10W 150K	
R7522	ERJ6GEYJ203	M.RESISTOR CH 1/10W 20K	
R7523	ERJ6GEYG912	M.RESISTOR CH 1/10W 9.1K	
R7601	ERDS2FJ331	C.RESISTOR 1/4W 330	
R7602	D0GDR00JA017	M.RESISTOR 0	[MAV] *1
R7602	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*2,*6
R7603	D0GDR00JA017	M.RESISTOR 0	[MAV] *1
R7603	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*2,*6
R7607	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R7608	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	
R7611	ERDS2FJ331	C.RESISTOR 1/4W 330	
R7701	ERJ6GEYG222	M.RESISTOR CH 1/10W 2.2K	
R7702	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	
R7706	ERJ6GEYJ101V	M.RESISTOR CH 1/10W 100	*3,*4,*5,*6
R7707	ERJ6GEYG102	M.RESISTOR CH 1/10W 1K	*3,*4,*5,*6
R7708	ERJ6GEYF561	M.RESISTOR CH 1/10W 560	
R7712	ERJ6GEYG105	M.RESISTOR CH 1/10W 1M	
S1532	K0ZZ00000598	SWITCH	[MAV]
S6001	K0C111A00003	SWITCH	
S7502	EVQ11G09K	SWITCH	
S7503	EVQ11G09K	SWITCH	
S7504	EVQ11G09K	SWITCH	
S7506	EVQ11G09K	SWITCH	
S7507	EVQ11G09K	SWITCH	
S7508	EVQ11G09K	SWITCH	
S7509	EVQ11G09K	SWITCH	
S7510	EVQ11G09K	SWITCH	
S7511	EVQ11G09K	SWITCH	
S7513	EVQ11G09K	SWITCH	
S7514	EVQ11G09K	SWITCH	
S7515	EVQ11G09K	SWITCH	
S7516	EVQ11G09K	SWITCH	
S7519	EVQ11G09K	SWITCH	
T1150	G4D2A0000051	SWITCHING TRANSFORMER	⚠ [MAV] *1,*2,*4,*5,*6
T1150	G4D2A0000101	SWITCHING TRANSFORMER	⚠ [MAV] *3
T4051	EQQ7QF024Q	TRANSFORMER	
TU7601	ENG57820G1	UV TUNER	⚠ [MAV] *1,*2
TU7601	ENG57818G1	UV TUNER	⚠ [MAV] *3,*4,*5
TU7601	ENG57912G1	UV TUNER	⚠ [MAV] *6

Ref. No.	Part No.	Part Name & Description	Remarks
VR7301	EVNCYAA03B14	V.RESISTOR 10K	*1
X3001	VSX0803	CRYSTAL OSCILLATOR	
X3002	H0D443400021	CRYSTAL OSCILLATOR	H0D443400020
X6001	H0A120500002	CRYSTAL OSCILLATOR	[MAV]
X6002	VSX1022	CRYSTAL OSCILLATOR	
X7301	H0H400400006	CRYSTAL OSCILLATOR	*1
X7302	H0D245500016	CRYSTAL OSCILLATOR	[MAV] *2,*6
		MISCELLANEOUS	
	EYF52BC	FUSE HOLDER	
	EYF52BC	FUSE HOLDER	
	VSC5319	HEAT SINK	[MAV] *3
	VMD4258	PHOTO TRANSISTOR HOLDER	[MAV]
	VMD4258	PHOTO TRANSISTOR HOLDER	[MAV]
	VMP4894	SUPPORT ANGLE	FOR DECODER C.B.A. *1
	VSC4752	SHIELD CASE (MAIN)	FOR NICAM DECODER C.B.A. *2,*6

12. Schematic Diagram for printing with A4 size

For your safety please read the following text carefully

This appliance is supplied with a moulded three pin mains plug for your safety and convenience.

A 5 amp fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5 amps and that it is approved by ASTA or BSI to BS 1362.

Check for the ASTA mark or the BSI mark on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained.

A replacement fuse cover can be purchased from your local Panasonic Dealer.

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.

THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13 AMP SOCKET.

If a new plug is to be fitted please observe the wiring code as shown below.

If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked with the letter L or coloured RED.

Under no circumstance should either of these wires be connected to the earth terminal of the three pin plug, marked with the letter E or the Earth Symbol ⏚.

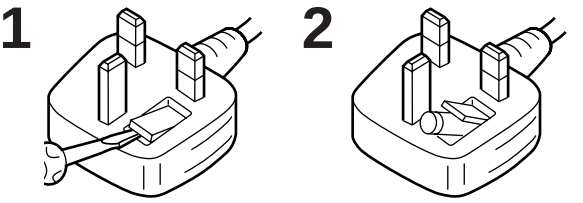
How to replace the Fuse

- There are two types of the AC Mains Lead assembly: **A** and **B** as shown below.

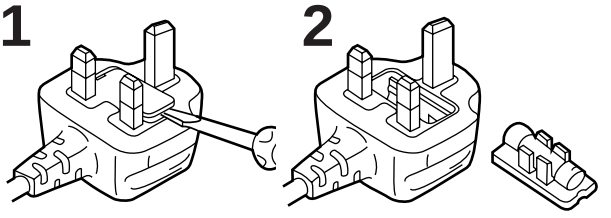
1 Open the fuse compartment with a screwdriver.

2 Replace the fuse and fuse cover.

TYPE A



TYPE B



443NT [L]	4.43 NTSC Ⓛ
A. COMP	AUDIO COMPONENT SIGNAL
A. COMPO	AUDIO COMPONENT SIGNAL
A. D.P [L]	AUDIO DUBBING PAUSE Ⓛ
A. D/L [L]	AUDIO DUBBING PAUSE Ⓛ
A. DEF [S]	AUDIO DEFEAT
A. DEF [S] [L]	AUDIO DEFEAT
A. DUB P [L]	AUDIO DUBBING PAUSE Ⓛ
A. DUB [H]	AUDIO DUBBING Ⓗ
A. ERASE	AUDIO ERASE
A. H. SW	AUDIO HEAD SWITCHING PULSE
A. HEAD [R]	AUDIO HEAD (REC)
A. HEAD [W]	AUDIO HEAD (PLAY)
A. IN [L]	AUDIO INPUT (L)
A. IN [R]	AUDIO INPUT (R)
A. MUT [H]	AUDIO MUTE Ⓗ
A. MUTE [H]	AUDIO MUTE Ⓗ
A. OUT [L]	AUDIO OUTPUT (L)
A. OUT [R]	AUDIO OUTPUT (R)
A. RF OUT	AUDIO RF SIGNAL OUTPUT
A/VS/S. DATA	AV SW/SERIAL DATA
AC ONLINE	AC ONLINE
AC. O/EE. H	AC ONLINE/EE Ⓗ
AFC S C	AFC S CURVE
AFC [S]	AFC S CURVE
AFC. DEF	AFC DEFEAT
ARFC OUT	AUDIO RF SIGNAL OUTPUT
ART. V	ARTIFICIAL VERTICAL SYNC SIGNAL
ART. V. MM	ARTIFICIAL VERTICAL SYNC SIGNAL MONO MULTI
ART. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL Ⓗ/NORMAL
AT. V/H/N	ARTIFICIAL VERTICAL SYNC SIGNAL
ATSW/TEST/NOR/SE	TEST/NORMAL/SERVICE
AUDIO IN [L]	AUDIO INPUT (L)
AUDIO IN [R]	AUDIO INPUT (R)
AUDIO OUT [L]	AUDIO OUTPUT (L)
AUDIO OUT [R]	AUDIO OUTPUT (R)
AUDIO SELECT [H]	AUDIO SELECT Ⓗ
AUDIO. L	AUDIO (L)
AUDIO. R	AUDIO (R)
AV CNT	AV CONTROL
AV CTL	AV CONTROL
AV CTL/S. CLK	AV CONTROL/SERIAL CLOCK
AV. C.M.	AV CONTROL MODE
AVCNT/METER. R	AV CONTROL/LEVEL METER (R)
AVSW/METER. L	AV SW/LEVEL METER (L)
B MODE. H	B MODE Ⓗ
B.G.P	BURST GATE PULSE
BACKUP 5V	BACK UP 5V
BAND. U.E.	BAND U
BANDVL. D	BAND VL
BI/MI [L]	BILINGUAL/MIX Ⓛ
BIL	BILINGUAL
BIL [L]	BILINGUAL Ⓛ
BIL. [H]	BILINGUAL Ⓗ
BIL/M1 [L]	BILINGUAL Ⓛ
BS CLOCK	BS CLOCK
BS DATA	BS DATA
BS LCH IN	BS L CHANNEL INPUT
BS MIX [H]	BS MIX Ⓗ
BS MON [H]	BS MONITOR Ⓗ
BS MONI [H]	BS MONITOR Ⓗ
BS RCH IN	BS R CHANNEL INPUT
BS VIDEO	BS VIDEO SIGNAL
BS VIDEO/BS1	BS VIDEO SIGNAL
BS [H]	BS Ⓗ
BS. LEVEL	BS LEVEL
BS. M [H]	BS MONITOR Ⓗ
BS/VTR [H]	BS/VTR Ⓗ
BUS CLK	BUS CLOCK
BUS LSN	BUS LISTEN
BUS TLK	BUS TALK
BUZZER	BUZZER
CAP EC	CAPSTAN TORQUE CONTROL
CAP M GND	CAPSTAN MOTOR GND
CAP. ET	CAPSTAN TORQUE CONTROL
CAP. FG1	CAPSTAN FG1 PULSE
CAP. FG2	CAPSTAN FG2 PULSE
CAS. SW	CASSETTE SW
CCN	PLAYBACK CONTROL SIGNAL (–)
CCP	PLAYBACK CONTROL SIGNAL (+)
CHM	CONTROL SIGNAL (+)
CHP	CONTROL SIGNAL (–)
CINEM [L]	CINEMA Ⓛ
CINEMA [L]	CINEMA Ⓛ
CINEMA/MIX	CINEMA/MIX
CKL	RATCH LOCK
CKS	SHIFT LOCK
CL	CLOCK
CLK	CLOCK
CLK (C.G)	CLOCK
CLOCK. IN	CLOCK INPUT
CLP	CLAMP
COL/B/W/NOR	COLOUR/BLACK & WHITE/NORMAL
COLOR [H]	COLOUR Ⓗ
CONV	CONVERTOR
CS	CHIP SELECT
CTL GND	CONTROL GND
CTL HEAD [+]	CONTROL HEAD (+)
CTL HEAD [–]	CONTROL HEAD (–)
CTL [+]	CONTROL HEAD (+)
CTL [–]	CONTROL HEAD (–)
CUE BIAS	CUE BIAS
CURRENT LIM	CURRENT LIMMITER
CYL ET	CYLINDER TORQUE CONTROL

CYL GND	CYLINDER GND
D.F.M. REC [H]	DELAIED FM RECORDING Ⓗ
D. FM REC [L]	DELAIED FM RECORDING Ⓛ
D. GND	DIGITAL GND
D. REC [H]	DELAYED RECORDING Ⓗ
D4/S. LED	D4/STILL LED
D4/STILLED	D4/STILL LED
DAC [CLK]	TUNER DAC (CLOCK)
DAC/FSCS	TUNER DAC/FS CHIP SELECT
DAREC [H]	DELAYED AUDIO RECORDING Ⓗ
DATA	DATA
DECODER [L]	DECODER (L)
DECODER [R]	DECODER (R)
DEW	DEW
DEW SNS	DEW SENSOR
DFMRE [H]	DELAYED FM AUDIO RECORDING Ⓗ
E. REC 5V	EXCEPT RECORDING 5V
EC	ERROR TORQUE CONTROL
ECR	ERROR TORQUE CONTROL REFERENCE VOLTAGE
EDT TRIG [L]	EDIT TRIGGER Ⓛ
EDIT [H]	EDIT Ⓗ
EE [H]	EE Ⓗ
EE [H]/INS [M]	EE Ⓗ/INSERT Ⓜ
EE. VV. TR	EE/VV/TRICK PLAY
EJECT. PO	EJECT POSITION
EJECT/VDET	EJECT/REVERSE SLOW LOCK
ENV. SEL	ENVELOPE SELECT
ENVE. OUT	ENVELOPE OUTPUT
ENVE. SEL	ENVELOPE SELECT
ENV SELECT	ENVELOPE SELECT
EP [H]	LP Ⓗ
EP/LP [H]	LP Ⓗ
EP/LP/SP	LP/SP
EP/SS [H]	LP/SLOW/STILL/STOP Ⓗ
EPROMCS	EPROM CHIP SELECT
EX. REC 5V	EXCEPT RECORDING 5V
FF/REW [L]	FIRST FORWARD/REWIND Ⓛ
FG1 IN	FG1 PULSE INPUT
FG2 IN	FG2 PULSE INPUT
FILTER ADJUSTMENT	FILTER ADJUSTMENT
FLY ERASE [H]	FLYING ERASE HEAD ON Ⓗ
FLY ON [H]	FLYING ERASE HEAD ON Ⓗ
FLY. E [H]	FLYING ERASE HEAD ON Ⓗ
FM MUT [H]	FM AUDIO MUTE Ⓗ
FM MUTE [H]	FM AUDIO MUTE Ⓗ
FM OUT [L]	FM OUTPUT (L)
FM OUT [R]	FM OUTPUT (R)
FM PACK OUT [L]	FM PACK OUTPUT (L)
FM PACK OUT [R]	FM PACK OUTPUT (R)
FM/BS SEL [L]	FM/BS SELECT (L)
FM/BS SEL [R]	FM/BS SELECT (R)
FS. CLK	FS CLOCK
FUL. E [H]	FULL ERASE HEAD ON Ⓗ
FULL. E [H]	FULL ERASE HEAD ON Ⓗ

FULL. E. 12V	FULL ERASE 12V
GND [A]	GND (ANALOG)
GND [TU]	GND (TUNER)
GND/N. SW. 12V	GND/NON SW 12V
H. SYNC	HORIZONTAL SYNC
H. AMP. SW	HEAD AMP SW PULSE
H. P <R>	HEAD PHONE (R)
H. P <L>	HEAD PHONE (L)
H. P GND	HEAD PHONE GND
H. P OUT [L]	HEAD PHONE OUTPUT (L)
H. P OUT [R]	HEAD PHONE OUTPUT (R)
H. SW	HEAD SW PULSE
HEAD PHONE [L]	HEAD PHONE (L)
HEAD PHONE [R]	HEAD PHONE (R)
HEAD SW	HEAD SW
HEATER [+]	HEATER (+)
HEATER [–]	HEATER (–)
HSS	HORIZONTAL SYNC SIGNAL
HTR [+]	HEATER (+)
HTR [–]	HEATER (–)
I RFE	REFERENCE CURRENT
ICL	CONTROL AGC CIRCUIT
IF	INTERMEDIATE FREQUENCY
IN SELA1	INPUT SELECT A1 POSITION
IN SELA2	INPUT SELECT A2 POSITION
IN SELA3	INPUT SELECT A3 POSITION
INS L/R [L]	INSERT Lch/Rch Ⓛ
INS. [H]	INSERT Ⓗ
INSEL A1	INPUT SELECT A1 POSITION
INSEL A2	INPUT SELECT A2 POSITION
INSERT	INSERT
INSERT [H]	INSERT Ⓗ
IO CS	INPUT/OUTPUT CHIP SELECT
JOG1	JOG1
JOG S3 LED/FOWRD	JOG LED/FORWARD LED
JOG/F. LED	JOG LED/FORWARD LED
JSB [H]	JSB Ⓗ
JST. CLCK	JUST CLOCK
JST. CLK	JUST CLOCK
JST. CLOCK	JUST CLOCK
L. OUT	Lch OUTPUT
L. CH [H]	Lch Ⓗ
L. CH [L]	Lch Ⓛ
LED (MAIN)	LED (MAIN)
LED (STEREO)	LED (STEREO)
LED (SUB)	LED (SUB)
LED CKL	LED SERIAL CLOCK
LED CKS	LED SERIAL CLOCK
LED DATA	LED SERIAL DATA
LINE IN 1 [L]	LINE INPUT 1 (L)
LINE IN 1 [R]	LINE INPUT 1 (R)
LINE IN 2 [L]	LINE INPUT 2 (L)
LINE IN 2 [R]	LINE INPUT 2 (R)
LINE IN V	LINE INPUT VIDEO
LINE IN [L]	LINE INPUT (L)

LINE IN [R]	LINE INPUT (R)
LINE OUT [L]	LINE OUTPUT (L)
LINE OUT [R]	LINE OUTPUT (R)
LP [H]	LP Ⓗ
LPTRI [L]	LP TRICK PLAY Ⓛ
Lch/A. DUB	Lch/AUDIO DUBBING
M GND	MOTOR GND
M REG	MOTOR REGULATOR
MAIN OUT	MAIN OUTPUT
MAIN [L]	MAIN Ⓛ
MAIN/MONO	MAIN/MONAURAL
MAX IN	MAXIMAM INPUT
MES [H]	MESECAM Ⓗ
MESE [H]	MESECAM Ⓗ
MESE [L]	MESECAM Ⓛ
METER 5V	LEVEL METER 5V
METER [L]	LEVEL METER (L)
METER [R]	LEVEL METER (R)
METER. L/AVS	LEVEL METER (L)
METER. R/AVC	LEVEL METER (R)
MI/BI [L]	MIX Ⓗ/BILIGUAL
MIC GND	MIC GND
MIC IN	MIC INPUT
MIC IN [L]	MIC INPUT (L)
MIC IN [R]	MIC INPUT (R)
MIC [H]	MIC Ⓗ
MIX [H]	MIX Ⓗ
MIX [H]/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINE	MIX Ⓗ/CINEMA SOUND Ⓛ
MIX/CINEMA [L]	MIX Ⓗ/CINEMA SOUND Ⓛ
MN. H/M. L	MONAURAL Ⓗ/MAIN Ⓛ
MN. H/MAI. L	MONAURAL Ⓗ/MAIN Ⓛ
MN2/MES. L	MONAURAL 2/MESECAM Ⓛ
MODE SEL	AUDIO MODE SELECT
MODE SW	AUDIO MODE SW
MODE. S. IN	AUDIO MODE SELECT INPUT
MODE. S. OUT	AUDIO MODE SELECT OUTPUT
MONO [H]	MONAURAL Ⓗ
MONO [H]/MAIN [L]	MONAURAL Ⓗ/MAIN Ⓛ
MONO2 [L]	MONAURAL 2
MONO2/MESE [FM(L)]	MONAURAL 2/MESECAM (FM Ⓛ)
MOTOR GND	MOTOR GND
MUTE	MUTE
N. A. REC [L]	NORMAL AUDIO RECORDING
N. SW 12V	NON SW 12V
N. SW. 5. DET	NON SW 5V DETECT
NICAM	NICAM
NICAM [L]	NICAM Ⓛ
NOL [H]	PAL Ⓗ/4.43 NTSC Ⓜ/3.58 NTSC Ⓛ
NOR/SOFT [H]	NORMAL/SOFT TAPE PLAY Ⓗ
NORMAL [H]	NORMAL Ⓗ
NR BIAS	NR BIAS
NTSC [L]	NTSC Ⓛ
OCH	CONTROL AGC CIRCUIT
OUT	OUTPUT

P-OFF [H]	POWER OFF Ⓗ
P-OFF [L]	POWER OFF Ⓛ
P. FAIL	POWER FAILURE DETECT
P. OFF [H]	POWER OFF Ⓗ
P. OFF [L]	POWER OFF Ⓛ
PAL [H]	PAL Ⓗ
PAL [L]/NTSC [H]	PAL Ⓛ/NTSC Ⓗ
PB ADJ OUT	PLAYBACK ADJUST OUTPUT
PB OUT	PLAYBACK OUTPUT
PB. H	PLAYBACK Ⓗ
PFG	PG/FG
PHOTSN +B	PHOTO SENSOR +B
PICT. CNT	PICTURE CONTROL
PLAY LED/RVS LED	PLAY LED/REVERSE LED
PLAY. PO	PLAY POSITION
PLAY/R. LED	PLAY LED/REVERSE LED
PLY/DEW	PLAY/DEW Ⓗ
POWER OFF [L]	POWER OFF Ⓛ
PREROLL [H]	PREROLL Ⓗ
PWRFAIL	POWER FAILURE DETECT
R. CH [H]	Rch Ⓗ
R. CH [L]	Rch Ⓛ
R. ST	RESET
R/S/F	REVERSE Ⓗ/STOP Ⓜ/FORWARD Ⓛ
RCH [H]	Rch Ⓗ
REC 12V	RECORDING 12V
REC CHROMA	RECORDING CHROMINANCE SIGNAL
REC H	RECORDING Ⓗ
REC IN	RECORDING INPUT
REC OUT [L]	RECORDING OUTPUT Ⓛ
REC START	RECORDING START
REC VR [C]	RECORDING VOLUME (COMMON)
REC VR [L]	RECORDING VOLUME (L)
REC VR [R]	RECORDING VOLUME (R)
REC Y	RECORDING LUMINANCE SIGNAL
REC [H]	RECORDING Ⓗ
REC. C	RECORDING CHROMINANCE SIGNAL
REC. Y	RECORDING LUMINANCE SIGNAL
REC/EE CTL	RECORDING/EE CONTROL
REEL-T	REEL PULSE (TAKE-UP)
REEL-S	REEL PULSE (SUPPLY)
REGULATOR FILTER	REGULATOR FILTER
RESET	RESET
REV M F/R	REVIEW MOTOR FORWARD/REVERSE
REV M V1	REVIEW MOTOR V1
REV M V2	REVIEW MOTOR V2
REV MOTOR F/R	REVIEW MOTOR FORWARD/REVERSE
REV MOTOR V1	REVIEW MOTOR V1
REV MOTOR V2	REVIEW MOTOR V2
REV MOTOR [+]	REVIEW MOTOR (+)
REV MOTOR [–]	REVIEW MOTOR (+)
REV. M. GND	REVIEW MOTOR GND
RF. CHROMA	RF CHROMINANCE SIGNAL

RF OUT	RF OUTPUT
RF Y	RF LUMINANCE SIGNAL
RF. Y. IN	RF LUMINANCE SIGNAL INPUT
RF. Y. OUT	RF LUMINANCE SIGNAL OUTPUT
ROTAR. SW	ROTARY SW
ROTARY	ROTARY SW
RST	RESET
RST [L]	RESET Ⓛ
Rch/INST	Rch/INSERT
S IN	SERIAL DATA INPUT
S OUT	SERIAL DATA OUTPUT
S-PHOTO	SUPPLY PHOTO TRANSISTOR
S-RL. PLS	SUPPLY REEL PULSE
S. CLK	SERIAL CLOCK
S. CLK/AV	SERIAL CLOCK/AV
S. DATA	SERIAL DATA
S. DATA/A	SERIAL DATA
S. PHOTO	SUPPLY PHOTO TRANSISTOR
S. TAB [L]	SAFETY TAB SW ON Ⓛ
S/P/N	SECAM/PAL/NTSC
SC IN	SERIAL CLOCK INPUT
SC OUT	SERIAL CLOCK OUTPUT
SCK SELECT	SERIAL CLOCK SELECT
SEL OUT [L]	SELECT OUTPUT (L)
SEL OUT [R]	SELECT OUTPUT (R)
SHUTTLE 1	SHUTTLE 1
SIF	SOUND INTERMEDIATE FREQUENCY
SLMUT [H]	INPUT SELECT MUTE Ⓗ
SLNID [+]	SOLENOID (+)
SLNID [–]	SOLENOID (–)
SLW TR. MM	SLOW TRACKING MONO MULTI
SLW TR. REF	SLOW TRACKING REFERENCE VOLTAGE
SNS. GND	SENSOR GND
SOFT [H]	SOFT TAPE PLAY Ⓗ
SOFT [H]/NORMAL	SOFT TAPE PLAY Ⓗ/NORMAL Ⓗ
SOLENOID ON [L]	SOLENOID ON Ⓛ
SP [H]	SP Ⓗ
SP/L/SLP	SP/LP
SSS [L]	SLOW/STILL/STOP
STEREO LED	STEREO LED
STEREO [H]	STEREO Ⓗ
STEREO [L]	STEREO Ⓛ
STOP. PO	STOP POSITION
STOP/5V	STOP POSITION/5V
STOP1/TAPE SEL	STOP1 POSITION/TAPE SELECT
STOP1/PAL:ST	STOP1 POSITION/PAL
STOP2. PO	STOP 2 POSITION
STOP2/S-TAB	STOP 2 POSITION/SAFETY TAB SW
STREO [H]	STEREO Ⓗ
SUB BIAS	SUB BIAS
SUB. SW	SUB SW
SVHS CAS [L]	S-VHS CASSETTE Ⓛ
SW. 5. DET	SW 5V DETECT
SYNC [L]	SYNC Ⓛ
SYSCON 5V	SYSTEM CONTROL 5V
SYSTEM	SYSTEM SW
T-PHOTO	TAKE-UP PHOTO TRANSISTOR
T-RL. PLS	TAKE-UP REEL PULSE
T. BUSCLK	TIMER BUS CLOCK
T. BUSLSN	TIMER BUS LISTEN
T. BUSTLK	TIMER BUS TALK
T. END [L]	TAPE END Ⓛ
T. PHOTO	TAKE-UP PHOTO TRANSISTOR
TAPE END [L]	TAPE END Ⓛ
TAPE END [L]/CAM	TAPE END Ⓛ/CAMERA PAUSE
TEST	TEST MODE
TPZ	TRAPEZOIDAL WAVE CIRCUIT
TRIC [L]	TRIC PLAY Ⓛ
TRICK [L]	TRIC PLAY Ⓛ
TRK. ENV	AUTO TRACKING ENVELOPE DETECT
TU. AUDIO	TUNER AUDIO
TU. GND	TUNER GND
TU. V. IN	TUNER VIDEO SIGNAL INPUT
TU. VIDEO	TUNER VIDEO
TUN NOR IN	TUNER NORMAL INPUT
TUN R	TUNER AUDIO (R)
TUN. AUDIO IN	TUNER AUDIO INPUT
TUNER 12V	TUNER 12V
TUNER L	TUNER AUDIO (L)
TUNER V IN	TUNER VIDEO SIGNAL INPUT
TUNER [L]	TUNER AUDIO (L)
TUNER [N]	TUNER AUDIO (NORMAL)
TUNER [R]	TUNER AUDIO (R)
TUNER. 12	TUNER 12V
TUOFF [H]	TUNER OFF Ⓗ
TV. AUDIO	TV AUDIO
TV/VTR	TV/VTR
TXTON [L]	TEXT ON Ⓛ
U. REG45V	UNREGULATOR 45V
UNREG	UNREGULATOR
UNREG19V	UNREGULATOR 19V
V. REF	REFERENCE VOLTAGE
V. EE [H]	VIDEO EE Ⓗ
V. EE [L]	VIDEO EE Ⓛ
VCO REF	REFERENCE OSCILLATER
VD. IN	VIDEO SIGNAL INPUT
VD. OUT	VIDEO SIGNAL OUTPUT
VIDEO EE [L]	VIDEO EE Ⓛ
VIDEO IN	VIDEO SIGNAL INPUT
VIDEO OUT	VIDEO SIGNAL OUTPUT
VM	MOTOR VOLTAGE
VM DOWN [L]	MOTOR VOLTAGE DOWN Ⓛ
VSS	VERTICAL SYNC SIGNAL
VTR [H]	VTR Ⓗ
VTR. 12V	VTR 12V
X IN	OSCILLATOR INPUT
X OUT	OSCILLATOR OUTPUT

SYSTEM CONTROL & SERVO ICs DC VOLTAGE CHART (SP MODE)

Ref. No.	IC1501					IC1502				IC2001										
MODE	1	2	3	4		1	2	3		1	2	3	4	5	6					
STOP	1.2	2.4	5.0	0.0		0.0	1.3	5.0		6.1	0.0	4.9	1.2	0.0	5.0					
PLAY	1.2	2.4	5.0	0.0		0.0	1.3	5.0		6.1	0.0	4.9	1.2	0.0	5.0					
REC	1.2	2.4	2.5	0.0		0.0	1.3	4.9		6.0	0.0	4.9	1.2	0.0	5.0					
F.F	1.2	2.4	2.6	0.0		0.0	1.3	2.5		6.5	0.0	4.9	1.2	0.0	5.0					
REW	1.2	2.4	2.5	0.0		0.0	1.3	2.4		6.3	0.0	4.9	1.2	0.0	5.0					
Ref. No.	IC2501																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	12.2	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.9	1.7	1.6	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
PLAY	12.3	4.8	0.0	4.8	0.0	0.0	16.3	0.0	2.8	1.7	1.7	0.7	1.4	2.4	2.5	2.5	2.5	1.3	5.0	3.6
REC	12.2	0.5	0.0	0.9	0.0	0.0	16.3	0.0	2.9	1.6	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
F.F	12.2	0.3	0.0	0.3	0.0	0.0	16.2	0.0	2.9	1.7	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3.5
REW	12.3	0.4	0.0	0.4	0.0	0.0	16.2	0.0	2.8	1.7	1.7	0.7	1.5	2.4	2.5	2.5	2.5	1.3	5.0	3..9
Ref. No.	IC2501																			
MODE	21	22	23	24	25															
STOP	12.2	3.5	3.5	0.0	3.5															
PLAY	12.3	3.6	3.6	0.1	3.6															
REC	12.2	3.6	3.5	0.0	3.6															
F.F	12.3	3.5	3.5	0.0	3.5															
REW	12.3	3.6	3.8	0.1	3.6															
Ref. No.	IC6001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	2.6	0.0	5.0	4.9	3.9	2.6	4.9	0.0	0.3	0.1	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0
PLAY	2.6	0.0	4.9	4.9	3.9	2.6	5.1	0.0	4.0	0.1	4.9	0.0	0.0	5.1	0.0	0.0	0.0	2.5	2.5	0.0
REC	2.6	0.0	4.9	4.9	3.9	2.6	5.0	0.0	0.0	0.1	4.9	0.0	0.0	5.1	0.0	0.0	0.0	2.5	0.0	4.9
F.F	2.6	0.0	4.9	4.9	3.9	2.6	4.9	0.0	4.0	0.1	4.9	0.0	0.0	5.1	0.0	0.0	0.0	2.5	0.0	0.0
REW	2.6	0.0	5.0	4.9	3.9	2.6	4.9	0.0	4.0	0.1	4.9	0.0	0.0	5.1	0.0	0.0	0.0	2.5	0.0	0.0
Ref. No.	IC6001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0.0	4.9	0.0	0.0	0.0	0.0	4.4	4.9	4.3	0.0	4.9	4.9	4.9	4.9	-	-	4.9	-	-	0.0
PLAY	4.9	4.9	0.0	0.0	0.0	0.0	4.4	4.9	4.3	0.0	4.9	4.9	0.0	5.0	-	-	5.0	-	-	0.0
REC	0.0	4.9	0.0	4.9	0.0	0.0	4.3	4.9	4.3	0.0	4.9	4.9	0.0	4.9	-	-	4.9	-	-	0.0
F.F	0.0	4.9	0.0	0.0	0.0	0.0	4.4	4.9	4.3	4.9	4.9	0.0	0.0	4.9	-	-	4.9	-	-	0.0
REW	0.0	4.9	0.0	0.0	0.0	0.0	4.4	4.9	4.3	4.9	4.9	0.0	0.0	4.9	-	-	4.9	-	-	0.0
Ref. No.	IC6001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	4.9	0.1	0.0	4.6	4.6	0.0	1.7	2.2	0.0	2.3	0.0	2.3	5.1	2.1	1.5	2.0	0.0	0.6	0.0	0.0
PLAY	4.9	0.1	0.0	4.6	4.6	0.0	1.7	2.2	0.0	2.3	0.0	2.3	5.2	2.1	1.6	2.0	0.0	0.7	0.0	0.0
REC	4.9	0.1	0.0	4.6	4.6	0.0	1.7	2.2	0.0	2.3	0.0	2.3	5.1	2.1	1.6	2.0	0.0	0.8	0.0	0.0
F.F	4.9	0.1	0.0	4.6	4.6	0.0	1.7	2.2	0.0	2.3	0.0	2.3	5.2	2.1	1.5	2.0	0.0	0.6	0.0	0.0
REW	4.9	0.1	0.0	4.6	4.6	0.0	1.7	2.2	0.0	2.3	0.0	2.3	5.2	2.1	1.5	2.0	0.0	0.6	0.0	0.0
Ref. No.	IC6001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
STOP	0.0	4.9	0.0	0.0	3.0	0.0	0.0	4.0	4.0	4.3	4.0	4.0	0.0	0.0	0.0	0.0	2.4	5.1	0.2	0.2
PLAY	0.0	4.9	0.0	0.0	3.0	0.0	0.0	4.0	4.0	4.3	4.0	4.0	0.0	0.0	0.0	2.5	2.4	5.2	5.0	4.2
REC	0.0	4.9	0.0	0.0	3.0	0.0	0.0	4.1	4.1	4.3	4.0	4.0	0.0	0.0	0.0	2.5	2.4	5.1	5.0	4.2
F.F	0.0	0.0	0.0	0.0	3.0	0.0	0.0	4.1	4.1	4.3	4.0	4.0	0.0	0.0	0.0	3.1	2.4	5.1	2.4	2.4
REW	0.0	0.0	0.0	0.0	3.0	0.0	0.0	4.1	4.1	4.3	4.0	4.0	0.0	0.0	0.0	2.6	2.4	5.1	2.4	2.4
Ref. No.	IC6001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
STOP	4.9	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.5	2.5	5.1	5.1	5.1
PLAY	4.9	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.6	5.1	5.2	5.1
REC	0.1	0.0	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.3	2.7	2.5	2.5	5.1	5.1	5.1
F.F	4.9	1.7	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.5	5.1	5.1	5.1
REW	4.9	1.7	0.0	0.0	0.0	2.6	2.6	0.0	0.0	1.3	2.6	2.6	0.0	2.5	2.5	2.6	2.7	5.2	5.2	5.1
Ref. No.	IC6002						IC6003													
MODE	1	2	3	4	5		1	2	3											
STOP	5.1	5.1	0.0	-	-		5.1	0.0	5.1											
PLAY	5.2	5.1	0.0	-	-		5.1	0.0	5.1											
REC	5.1	5.1	0.0	-	-		5.1	0.0	5.1											
F.F	5.2	5.2	0.0	-	-		5.1	0.0	5.1											
REW	5.1	5.2	0.0	-	-		5.1	0.0	5.1											

SYSTEM CONTROL & SERVO TRs DC VOLTAGE CHART (SP MODE)

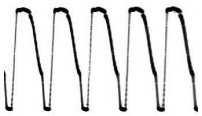
Ref. No.	Q1501				Q1502				Q7701											
MODE	+	–			+	–			E	C	B									
STOP	4.9	0.0			5.1	0.0			0.0	5.0	2.1									
PLAY	4.9	0.0			5.1	0.0			0.0	5.0	2.1									
REC	4.9	0.0			5.1	0.0			0.0	5.0	2.1									
F.F	4.9	0.0			5.1	0.0			0.0	5.0	2.1									
REW	4.9	0.0			5.1	0.0			0.0	5.0	2.1									

T1150-3 STOP
3.8Vp-p (2msec.div.)

T1150-5 STOP
560Vp-p (5usec.div.)

T1150-7 STOP
33Vp-p (5usec.div.)

T1150-10 STOP
100Vp-p (5usec.div.)

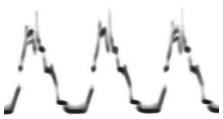


T1150-11 STOP
18Vp-p (5usec.div.)

T1150-13 STOP
40Vp-p (5usec.div.)

T1150-16 STOP
76Vp-p (5usec.div.)

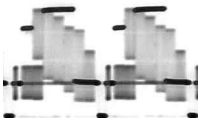
Q1200-1 STOP
0.4Vp-p (5usec.div.)



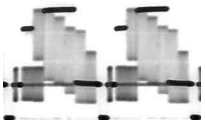
IC2501-22,23,25 PLAY
7.0Vp-p (2msec.div.)

IC6001-13 STILL
5.0Vp-p (5msec.div.)

IC6001-18 REC
5.0Vp-p (10usec.div.)

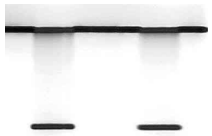


IC6001-50 REC/PLAY
2.0Vp-p (20usec.div.)

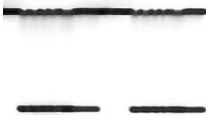


IC6001-52 REC/PLAY
2.0Vp-p (20usec.div.)

IC6001-68,69 REC
5.0Vp-p (5msec.div.)



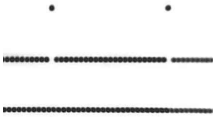
IC6001-70 REC
5.0Vp-p (5msec.div.)



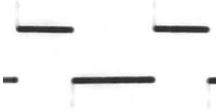
IC6001-71 REC
5.0Vp-p (5usec.div.)

IC6001-72 REC
5.0Vp-p (5msec.div.)

IC6001-79,80 FF/REW
4.8Vp-p (1msec.div.)

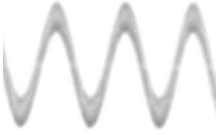


IC6001-90 REC
5.0Vp-p (10msec.div.)



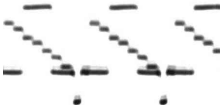
IC6001-94,95 REC
6.2Vp-p (10msec.div.)

IC6001-97 PLAY
0.7Vp-p (10msec.div.)



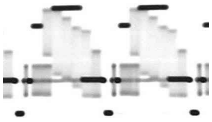
IC3001-4 REC
0.7Vp-p (0.5msec.div.)

IC3001-11 REC/PLAY
0.4Vp-p (0.5msec.div.)

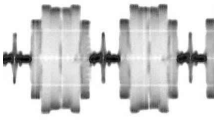


IC3001-21 REC/PLAY
0.4Vp-p (20usec.div.)

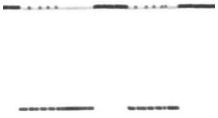
IC3001-30 REC
1.0Vp-p (20usec.div.)



IC3001-52 REC/PLAY
2.0Vp-p (20usec.div.)



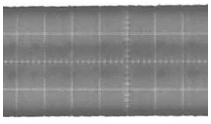
IC3001-60 REC/PLAY
0.3Vp-p (20usec.div.)



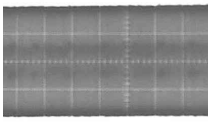
IC3001-62 REC
4.6Vp-p (5msec.div.)

IC3001-63 REC
5.0Vp-p (5msec.div.)

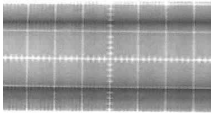
IC3001-81 REC/PLAY
5.0Vp-p (10msec.div.)



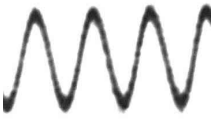
IC3001-87 REC
0.9Vp-p (20usec.div.)



IC3001-88 REC
0.9Vp-p (20usec.div.)



IC4501-21 REC
1.4Vp-p (20usec.div.)

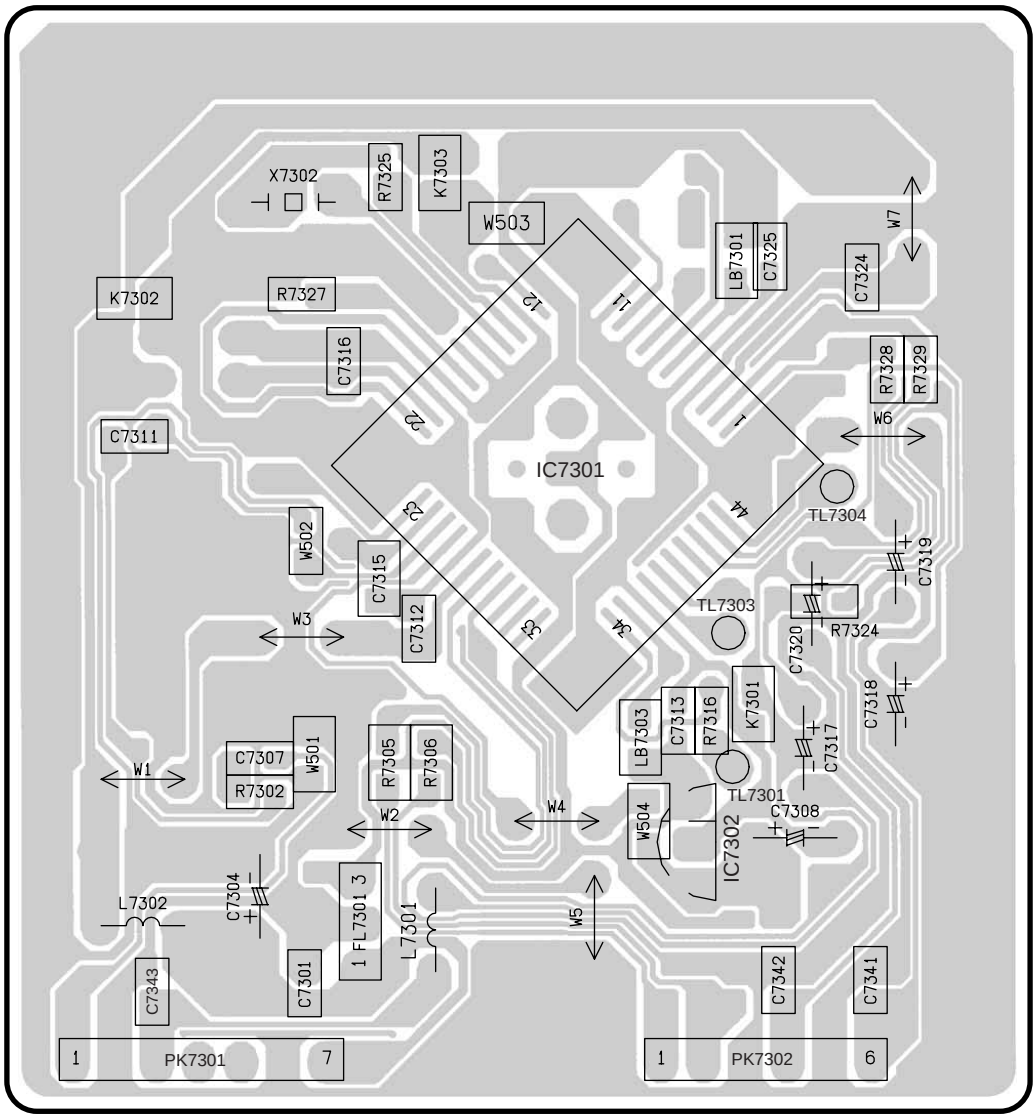


IC4501-53,57 REC/PLAY
0.7Vp-p (0.5msec.div.)

NICAM DECODER PACK C.B.A.	
Integrated Circuit	
IC7301	B-2
IC7302	A-2
Test Point	
TL7301	A-2
TL7303	B-2
TL7304	B-2
Integrated Circuit	
PK7301	A-1
PK7302	A-2

ADDRESS INFORMATION

(VEP07A18U:NV-FJ630EA)
(VEP07A18W:NV-FJ630BD/BDX)



NV-FJ630EA/BD/BDX
NICAM DECODER PACK C.B.A.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

CAUTION

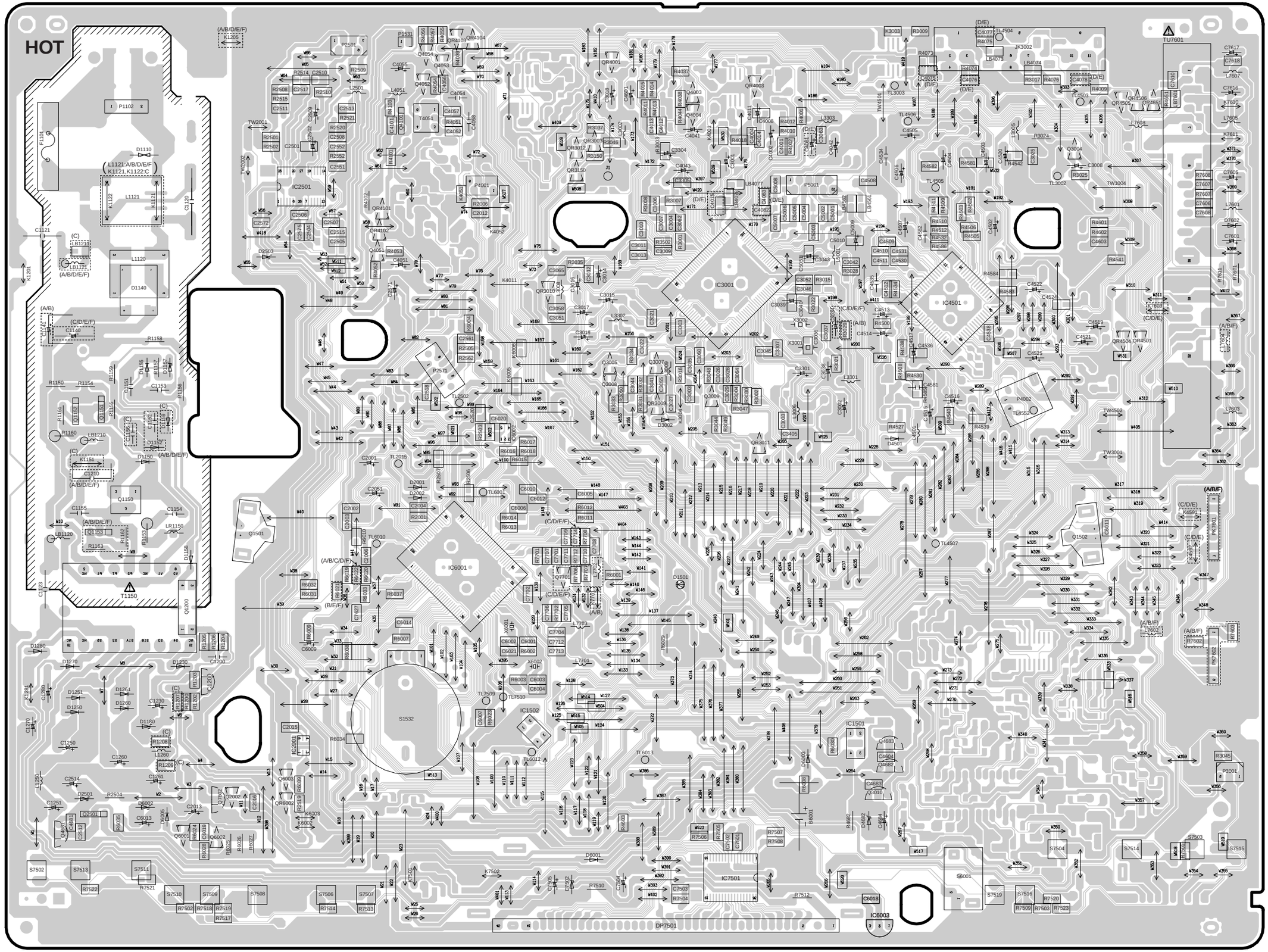
THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

MAIN C.B.A.

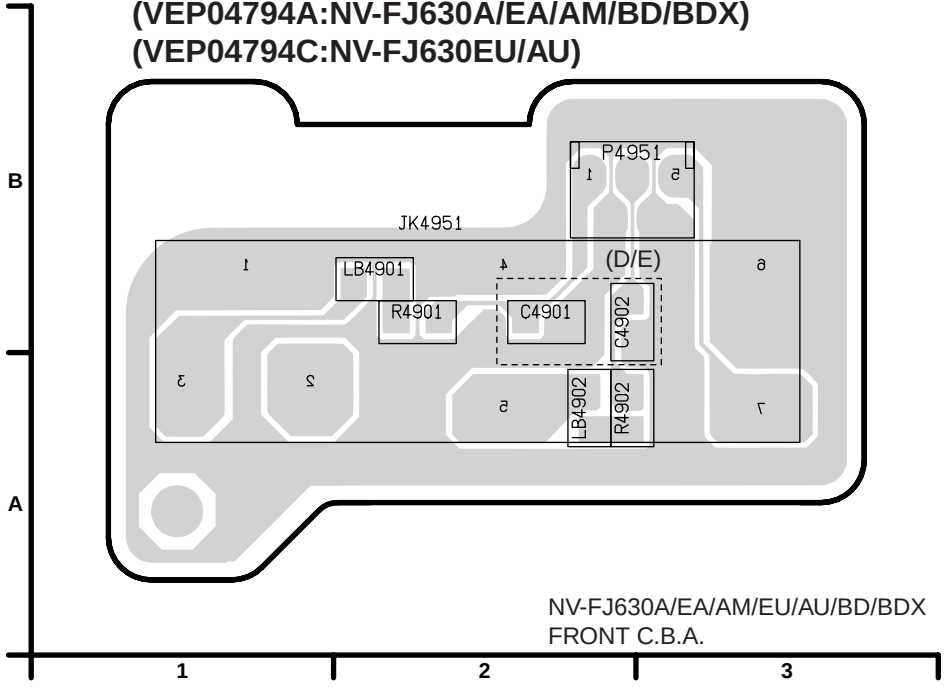
Transistor		**Integrated Circuit**	
Q1150	C-1	IC1200	B-2
Q1151	D-1	IC1501	B-6
Q1152	D-1	IC1502	B-4
Q1153	C-1	IC2001	B-2
Q1200	C-2	IC2501	E-2
Q1501	C-2	IC3001	E-5
Q1502	C-7	IC4501	E-6
Q2002	B-2	IC6001	C-3
Q2501	A-1	IC6002	D-4
Q3004	E-7	IC6003	A-6
Q3005	D-4	IC7501	A-5
Q3007	D-5	**Test Point**	
Q3008	D-4	TL2015	D-3
Q3009	D-5	TL2502	D-3
Q3010	B-6	TL3002	E-7
Q4003	F-5	TL3003	F-6
Q4004	F-5	TL4503	F-7
Q4051	E-3	TL4504	F-7
Q4052	F-3	TL4505	E-6
Q4053	F-3	TL4506	F-6
Q4054	F-3	TL4507	C-6
Q4101	F-3	TL4552	D-7
Q4681	A-1	TL6001	C-4
Q4682	B-6	TL6010	C-3
Q4683	B-6	TL6012	B-4
Q6001	A-2	TL6013	B-5
Q6002	A-2	TL7509	B-4
Q6003	B-2	TL7510	B-4
Q7602	B-2	TW1004	E-7
Q7701	C-4	TW2001	F-2
Transistor & Resistor		TW2002	E-2
QR3003	F-4	TW3001	D-7
QR3009	D-5	TW4501	F-6
QR3010	E-4	TW4502	D-7
QR3011	D-5	**Connector**	
QR3012	E-4	P1102	F-1
QR3150	E-4	P1531	F-3
QR4001	F-4	P2501	F-3
QR4003	F-5	P2571	D-3
QR4101	E-3	P3001	B-8
QR4102	E-3	P4001	E-4
QR4103	F-3	P4002	D-7
QR4104	F-3	P5001	E-6
QR4501	D-8	PK7601	C-8
QR4504	D-7	PK7602	B-8
QR4505	F-7	TU7601	F-8
QR4506	F-8		
QR4651	F-8		
QR6002	B-2		

ADDRESS INFORMATION

(VEP06E44L:NV-FJ630A)(VEP06E44M:NV-FJ630EA)(VEP06E44N:NV-FJ630AM)(VEP06E44P:NV-FJ630EU)(VEP06E44Q:NV-FJ630AU)(VEP06E44R:NV-FJ630BD/BDX)



(VEP04794A:NV-FJ630A/EA/AM/BD/BDX)
(VEP04794C:NV-FJ630EU/AU)



NV-FJ630A/EA/AM/EU/AU/BD/BDX
FRONT C.B.A.

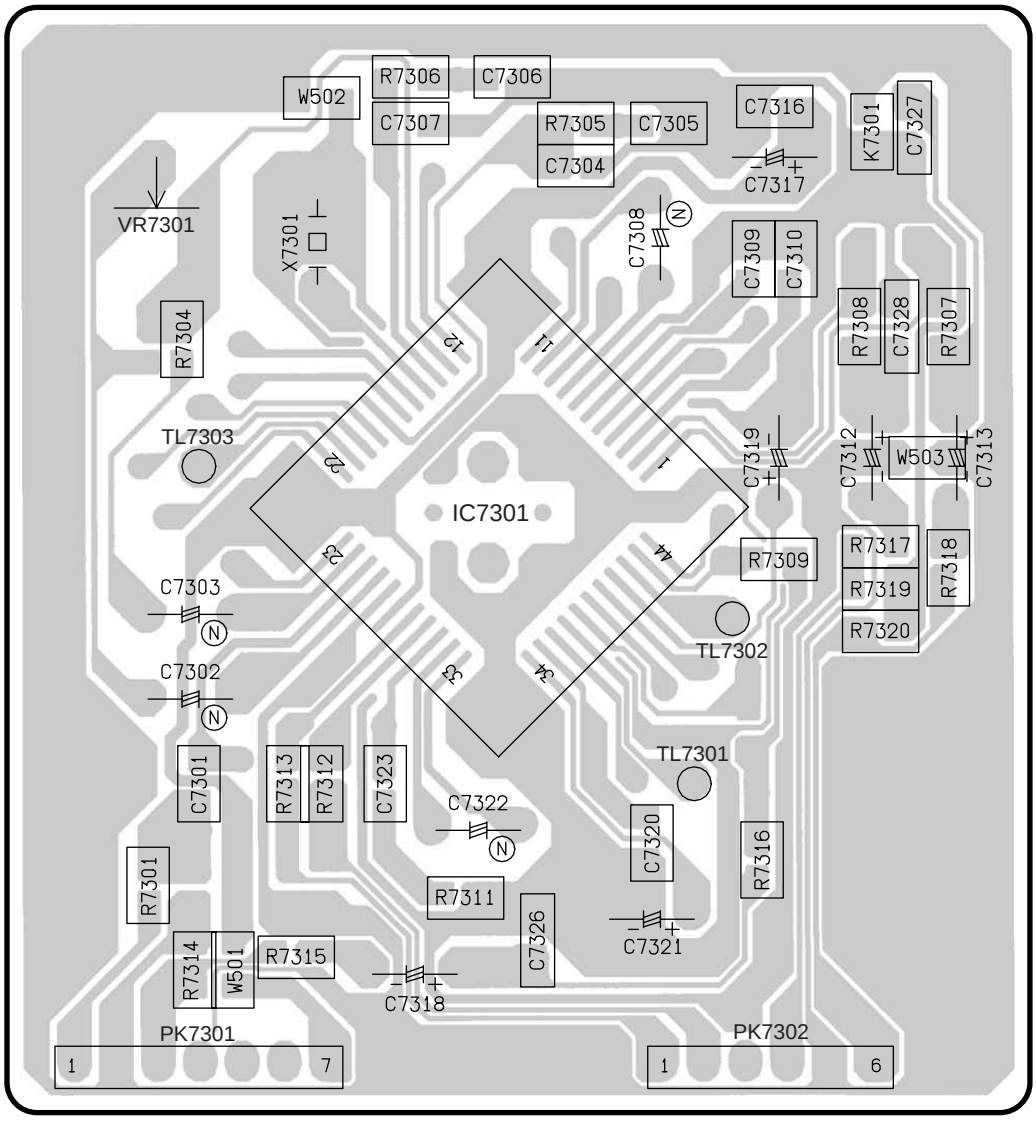
FRONT C.B.A.	
Connector	
P4951	B-3

ADDRESS INFORMATION

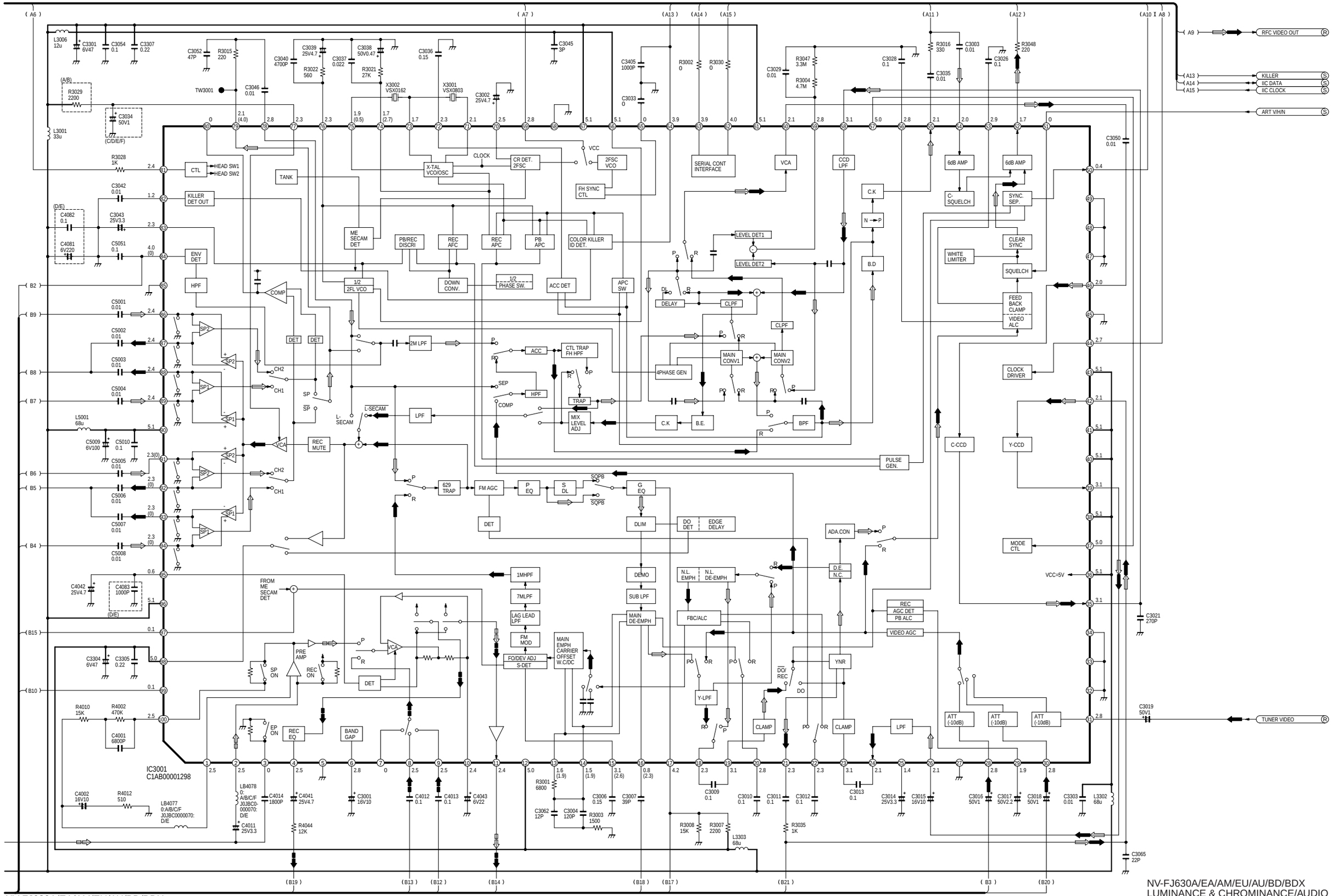
DECODER PACK C.B.A.	
Integrated Circuit	
IC7301	B-2
Test Point	
TL7301	A-2
TL7302	B-2
TL7303	B-1
Adjustment	
VR7301	C-1
Connector	
PK7301	A-1
PK7302	A-2

ADDRESS INFORMATION

(VEP07A16B:NV-FJ630A)



NV-FJ630A
DECODER PACK C.B.A.



NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION

Ⓡ TUNER 5V
Ⓐ AUDIO IN (R) (A1)
Ⓐ AUDIO IN (L) (A2)
Ⓐ AUDIO OUT (R) (A3)
Ⓐ AUDIO OUT (L) (A4)
Ⓢ VIDEO OUT (A5)
Ⓢ HEAD SW (A6)

P4002 (TO FULL ERASE HEAD)
1 FULL ERASE IN
2 FULL ERASE OUT

Ⓢ D.A.REC Ⓗ
Ⓢ CTL HEAD (+)
Ⓢ CTL HEAD (-)

P4001 (TO A/C HEAD)
1 AUDIO ERASE IN
2 GND
3 A.HEAD (R) (B1)
4 A.HEAD (W)
5 CTL HEAD (-)
6 CTL HEAD (+)

Ⓡ REG.12V
Ⓢ REF. Ⓗ
Ⓐ Ⓢ FSC
Ⓢ BIAS Ⓛ
Ⓢ TRACKING ENV. (B2)
Ⓐ FRONT AUDIO (R)
Ⓐ FRONT AUDIO (L)

P3001 (TO FRONT P4951(A-1))
1 FRONT VIDEO (B3)
2 GND
3 FRONT AUDIO (L)
4 GND
5 FRONT AUDIO (R)

P5001 (TO CYLINDER UNIT)
1 EP R (B4)
2 EP COM (B5)
3 EP L (B6)
4 SP R (B7)
5 SP COM (B8)
6 SP L (B9)
7 GND
8 AUDIO HEAD L
9 AUDIO HEAD COM
10 AUDIO HEAD R

Ⓢ PAL PB Ⓛ
Ⓢ PAL PBSQ
Ⓢ PICTURE 2
Ⓐ AUDIO HEAD R
Ⓐ AUDIO HEAD COM
Ⓐ AUDIO HEAD L
Ⓢ Y/C VIDEO OUT

Ⓢ FM MUTE Ⓗ R4001 10K (B10)
Ⓡ TUNER AUDIO (N) R4015 47K (B12)
Ⓐ AUDIO IN (N) R4014 0 (B13)
R4011 120K
R4013 15K
Ⓐ AUDIO OUT (N) (B14)
Ⓢ S-VHS PB Ⓗ (B15)
Ⓢ PAL 9H Ⓗ (B16)
C3063 2200P

Ⓢ AI PB CTL R3502 1500 (B17)
Ⓢ NTSC Ⓛ
Ⓢ SP Ⓛ
Ⓢ PICTURE 1
Ⓡ AV 12V
Ⓡ VIDEO 5V

(A7) (A8)

Q3005 2SD601A (AMP)
5.1 / 2.8 / 2.2
C3022 0.01
R3034 2200
C4058 0.022
C4054 6800P

QR4103 UN2111 (D.A.REC:ON)
QR4104 UN2213 (D.A.REC Ⓗ :ON)
R4055 470
R4056 10K
R4057 470
Q4053 2SD1328 (D.A.REC:ON)
Q4054 2SD1328 (D.A.REC:ON)

Q4101 2SD1996A (REF.CONTROL)
R4101 4.7
QR4101 UN2111 (REF. Ⓛ :ON)
QR4102 UN2213 (REF. Ⓗ :ON)
C4101 0.01
R4102 1K
R4103 2200

T4051 EQQ7QF024Q
R4051 3300
C4052 470P
R4054 3300
Q4052 2SD602A (OSC)
C4057 1500P

L4051 470u
C4055 16V220
C4056 0.022
R4052 2200
R4053 3300
C4051 6V47
Q4051 2SB710A (BIAS Ⓛ :ON)

QR4001 UN2111 (D.A.REC Ⓗ :OFF)
R4039 10K

R3046 27K
R3037 18K
QR3012 UN2213 (PAL:ON)
QR3003 UN2213 (LP/EP:ON)
R3150 15K
L3002 390u
QR3150 UN2213 (INV.)

Q4003 2SD1149 (PB:ON)
Q4004 2SD601A (PB:ON)
R4037 1K
R4038 1K

(B18) (B19)

JK3002 VJJ0675
AUDIO IN(R) / AUDIO IN(L) / VIDEO IN / AUDIO OUT(R) / AUDIO OUT(L) / VIDEO OUT
1 2 3 4 5 6 7 8

(A5)

LB4073 0: A/B/C/F VLP0147: D/E
LB4074 0: A/B/C/F VLP0147: D/E
R4073 0: A/B/C/F 470:D/E
R4074 0: A/B/C/F 470:D/E
R4075 470
R4076 470
R3017 68
(D/E)
C4076 470P
C4075 470P
C4078 470P
C4077 470P
R4009 0
TL4506 TL4505 TL3003
TL4504 TL4503 TL3002
(A1) (A2) (A3) (A4)

(A9)

C3008 6V470
R3024 680
C3025 0.1
L3005 68u
R3025 470
Q3004 2SB709A (AMP)
R3009 75

(B20)
(A10)
(A11)

Q3008 2SC2295 (BUFFER)
R3050 10K
C3044 330P
C3041 33P
R3033 3300
R3032 22K
D3002 RB441P
R3031 47K
Q3007 2SD1328 (INV.)
C3027 12P
C3055 10P
L3009 39u
QR3009 UN2213 (NTSC:ON)

C3058 7P
L3008 18u
C3051 12P
QR3010 UN2213 (NTSC:ON)

(B21)
(A12)

R3044 2200
R3049 3900
Q3009 2SB709A (AMP)
QR3011 UN2213 (INV.)

C4008 2200P
C4004 1800P
R4018 15K
QR4003 UN2211 (PAL 9H Ⓗ :ON)

(B16) (B1)

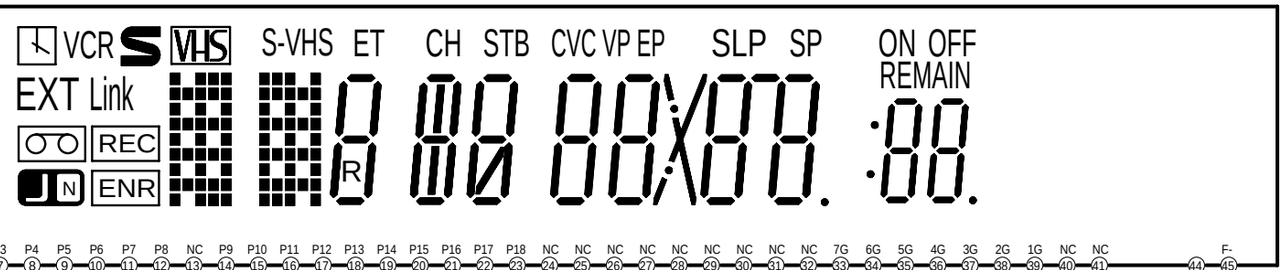
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION

DP7501
A2BD00000049



F+ P1 P2 P3 P4 P5 P6 P7 P8 NC P9 P10 P11 P12 P13 P14 P15 P16 P17 P18 NC NC NC NC NC NC NC NC NC NC 7G 6G 5G 4G 3G 2G 1G NC NC F-
1 2 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 44 45

Ⓟ HEATER(+) — R7512 22

Ⓟ HEATER(-) — D7502 MA4220M — C7505 35V10 — R7510 820

Ⓟ UNREG -29V — R7504 100 — C7503 0.1

-26.7 -22.2 -26.7 -26.7 -26.7 -26.7 -26.7 -22.2 -22.2 -22.2 -22.2 -22.6 -22.6 -22.6 -26.9 -17.6 -27.0 -27.2
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16 S17 VEE
36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19

IC7501
M35502AFP

S DATA S CLOCK CS Ⓛ A3 A2 A5 A4 VSS OSC VCC G1 G2 G3 G4 G5 G6 G7 S18
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

4.0 4.3 3.0 5.1 5.1 2.3 5.1 -22.8 -22.8 -22.8 -22.8 -22.8 -22.8 -22.8 -22.8

Ⓢ S.DATA — R7507 220
Ⓢ S.CLOCK — R7508 220
Ⓢ FIP CS

C7501 12P

Ⓡ SYSTEM CTL 5V
Ⓡ GND

R7506 12K
R7505 12K

C7502 0.1 — C7504 6V100

PLAY — S7502 EVQ11G09K — R7521 150K
CH DOWN — S7507 EVQ11G09K — R7513 1800
EJECT — S7511 EVQ11G09K — R7509 3900
PICTURE — S7519 EVQ11G09K — R7503 3600
TAPE REFRECH — S7516 EVQ11G09K — R7520 5100
SEARCH — S7514 EVQ11G09K — R7523 9100
JET REW — S7504 EVQ11G09K

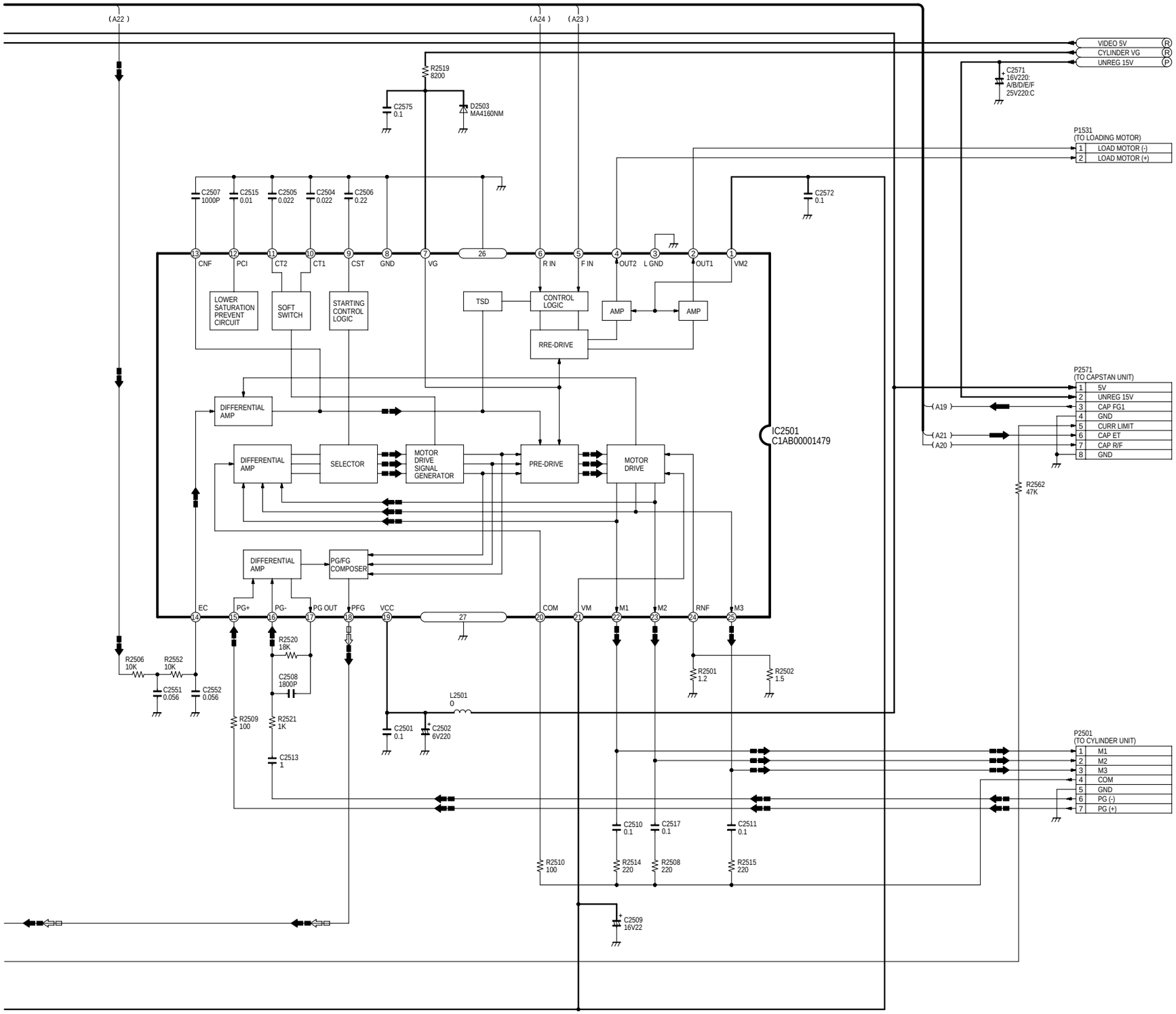
T.REC — S7503 EVQ11G09K — R7501 150K
CH UP — S7506 EVQ11G09K — R7514 1800
POWER — S7515 EVQ11G09K — R7517 3900
REC — S7508 EVQ11G09K — R7519 3600
REW — S7509 EVQ11G09K — R7518 5100
FF — S7510 EVQ11G09K — R7502 9100
STOP — S7513 EVQ11G09K — R7522 20K

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
TIMER SECTION SCHEMATIC DIAGRAM

F E D C B A
1 2 3 4 5 6 7 8



NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE & AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION

CAPSTAN SERVO SPEED LOOP
CAPSTAN SERVO PHASE LOOP
CYLINDER SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP

(A18) (A19) (A2) (A20) (A21) (A22) (A3) (A4) (A5) (A6) (A7) (A23) (A24) (A8) (A9) (A10) (A18) (A11) (A12)

Ⓥ Ⓐ FM MUTE Ⓗ (A16)
Ⓡ Ⓥ SW1 (A15)
Ⓥ FSC (A14)
Ⓥ Y/C VIDEO OUT (A13)
Ⓥ KILLER (A12)
Ⓥ VIDEO OUT (A11)
Ⓥ PAL 9H Ⓗ (A10)
Ⓡ SW2 (A9)
Ⓣ FIP CS (A8)
Ⓣ S.DATA (A7)
Ⓣ S.CLOCK (A6)
Ⓡ Ⓥ Ⓐ IIC CLOCK (A5)
Ⓡ Ⓥ Ⓐ IIC DATA (A4)
Ⓥ REF. Ⓗ (A3)
Ⓥ BIAS Ⓛ (A2)

Ⓟ UNREG 6V
Ⓡ SYSTEM CTL 5V
Ⓡ GND
C2006 0.1

MODE SW
S1532
K0ZZ00000598
1 2 3 4 5 (B1) (B2) (B3) (B4)

Ⓥ CTL HEAD (-)
Ⓥ CTL HEAD (+)

Ⓡ AFC S-CURVE (B5)
Ⓥ S-VHS PB Ⓗ (B7)

Ⓥ PAL SQPB (B11)
Ⓥ HEAD SW (B12)
Ⓐ A.HEAD SW (B13)
Ⓥ D.A.REC Ⓗ (B14)
Ⓥ PICTURE 1 (B15)
Ⓥ PICTURE 2 (B16)
Ⓥ PAL PB Ⓛ (B17)
Ⓐ D.FM REC Ⓗ (B18)
Ⓥ SP Ⓛ (B19)
Ⓐ ABS NORMAL (B20)
Ⓥ NTSC Ⓛ (B21)
Ⓥ AI PB CTL (B22)

Ⓥ ART V/H/N
Ⓥ TRACKING ENV.
Ⓡ POWER ON Ⓗ

Ⓡ REG 12V
Ⓡ BACK UP 5V

IC1501
B3NAA0000049
(S-REEL SENSOR)
R6030 120

IC1502
B3NAA0000049
(T-REEL SENSOR)

IC6002
C0EBH0000172
(RESET)
GND 3, VDD 2, OUT 1
C6020 0.01

C2518 1
R2507 3900

R2505 1K
R2503 1K
C2561 0.056
C2520 0.056

R6032 27K
R6031 27K

TL6012
TL6013
TL6001

R6006 3300
R6005 3300
R6017 3300
R6018 3300
C6005 220P
C6006 220P
C6010 47P
C6012 47P

R6016 220
R6015 220
R6014 220
R6013 220
R6012 3300
R6011 3300
R6001 3300

(C/D/E/F)
C7714 100P
L7702 10u
C7708 470P: A/B/C/D/E 680P:F
C7709 1800P: A/B/C/D/E 1500P:F

C7702 0.1
(C/D/E/F)
R7707 1K
Q7701 2SB709A (AMP)
R7706 100
R7708 560
C7710 1
R7712 1M
(A/B)

R7701 2200
C7711 1000P
C7707 1000P
C7701 0.033
R7702 1K
C7706 470P
C7705 0.01

TL2015
D2001 MA165
D2002 MA165
C2004 33P
R2001 1M
C2003 0.1

K6004 10K

C2012 680P
R2006 6800

TW2002
C2002 3900P

IC2001
C0DBCHD00002
(5V SWITCHING REG.)
IN 1, OUT 6
C2015 0.01

IC6003
PNA4618M09V
(IR RECEIVER)
R OUT, GND, VCC

R6010 10K
TL6010

IC6001
C2CBHF000204:A/B
C2CBHF000201:C/F
C2CBHF000202:D/E

R6019 10K
R6021 10K (B/E/F)
R6020 18K: A/B/D/E 10K:C/F
R6022 10K (A/B/C/D/F)

C6018 0.1
R6033 27K
R6029 150
R6034 27K

Q1501
PNA2604M01
(T-PHOTO)
Q1502
PNA2604M01
(S-PHOTO)
SENSOR
D1501
B3EA00000072

C6011 0.1

R6037 10K
R6038 22K
R6009 18K
C6009 25V3.3

TW2001
C6014 1000P
R6007 0

TL2502

C6021 0.1
R6023 3300
TL7509
TL7510
C6007 0.1

SAFETY TAB
S6001
K0C111A00003

C7704 0.01
L7703 0
C7712 100P
L7701 5.6u
C7713 82P

C6002 22P
R6002 1K
X6001 H0A120-500002
C6001 27P
R6003 150K
X6002 VSX1022
C6004 15P
C6003 12P

CV IN 50 (A13)
OSD GND 49
FSC IN 48 (A14)
FSC LPF 47
GND 46
LC.OSD OUT 45
LC.OSD IN 44
32K START Ⓛ 43 (A15)
FM MUTE 42 (A16)
SW1 41
GND 40
12MHz OUT 39
12MHz IN 38
D VDD 37
32KHz OUT 36
32KHz IN 65
RESET Ⓛ 64
POSI.SW1 63
POSI.SW2 62
POSI.SW3 61

1 CODE 1
2 CODE 2
3 T-PHOTO
4 P ON Ⓗ
5 SAFETY
6 AFC S-CURVE
7 S-PHOTO
8
9 TRACK ENV.
10 SQ PB$EVHS
11 CURR.LIMIT Ⓗ
12
13 ART V/H/N
14 IR
15
16
17 PAL SQPB
18 VIDEO H SW
19 AUDIO H SW
20 D.A.REC Ⓗ
21 PIC 1
22 PIC 2
23 PAL PB
24 D.FM REC
25 SP Ⓛ
26 S.TAB Ⓛ
27 ABS NOR
28 NTSC Ⓛ
29 A.VR Ⓛ
30 POSI.SW4

61 BIAS Ⓛ
62 EX.FF/REW Ⓛ
63
64
65 GND
66 CAP FG OUT
67 CAP FG IN
68 GND(A)
69
90 CYL PFG
91 O REF
92 I REF
93 GND
94 CTL HEAD(-)
95 CTL HEAD(+)
96 CTL AMP REF
97 PB CTL OUT
98 A VDD
99 AD VDD
100 NOR/SER/T1/T2

C2001 16V10
C2051 6V22

51 KILLER
52 CV OUT
53 OSD VDD
54 HLF
55 V.HOLD
56 CV IN2
57 GND
58 A.SEARCH
59 SECAM MIX
60 OUT1
61 SW2
62 PAL 9H
63 VBI2
64 VBI1/VR/ OSD DATA
65 FL DRV CS
66 UNLOAD Ⓗ
67 LOAD Ⓗ
68 IC TALK
69 IC LSN
70 IC CLK
71 IIC CLK
72 IIC DATA
73 125Hz
74 CAP R/F
75 REFRESH
76 CAP ET
77 CYL ET
78 P FAIL
79 S REEL
80 T REEL

(B25) (B26) (B27) (B28) (B29) (B26) (B5) (B27) (B7) (B25) (B28) (B11) (B12) (B13) (B14) (B15) (B16) (B17) (B18) (B19) (B20) (B21) (B22) (B4) (B3) (B2) (B1) (B29)

NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

G F E D C B A
1 2 3 4 5 6 7 8 9 10 11

Ⓟ :TO POWER TRANSFORMER SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION
Ⓐ :TO Hi-Fi AUDIO SECTION

VIDEO MAIN SIGNAL PATH IN REC MODE
VIDEO MAIN SIGNAL PATH IN PLAYBACK MODE
AUDIO MAIN SIGNAL PATH IN REC MODE
AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

⚠ TU7601
ENG57820G1:A/B
ENG57818G1:C/D/E
ENG57912G1:F

1 N.SW 5V
2 AUDIO OUT
3 DATA
4 N.SW 5V
5 CLOCK
6 VIDEO OUT
7
8
9
10
11 CLOCK
12 DATA
13
14 N.SW 5V
15
16 REG 30V
17 IF OUT
18 IF IN
19 SW1
20 SW2
21 A COMPO
22 SIF/QPSK
23 AFC S-CURVE
24 TUNER VIDEO
25 TUNER 5V

Ⓟ UNREG 38V
Ⓢ POWER ON Ⓗ
Ⓟ UNREG 6V
Ⓢ CYLINDER VG
Ⓟ UNREG 15V
Ⓟ GND
Ⓢ Ⓥ REG 12V
Ⓥ Ⓐ AV 12V
Ⓢ GND
Ⓣ GND
Ⓥ GND
Ⓐ GND
Ⓐ TUNER AUDIO (L) A1
Ⓐ TUNER AUDIO (R) A2
Ⓢ IIC DATA A3
Ⓢ IIC CLOCK A4
Ⓥ TUNER AUDIO (N) A5
Ⓥ TUNER VIDEO A6
Ⓢ AFC S-CURVE A7
Ⓢ SW2 A8
Ⓢ SW1 A9
Ⓥ RFC VIDEO OUT A10
Ⓐ RFC AUDIO OUT A11
Ⓢ Ⓣ Ⓐ SYSTEM CTL 5V
Ⓐ N.SW 5V
Ⓢ BACK UP 5V
Ⓢ Ⓥ VIDEO 5V
Ⓥ TUNER 5V
Ⓐ AUDIO 5V

QR6002 UN2112 (POWER ON:ON) 39.5 39.4 0.1
R6039 100K 0.6
Q6003 2SD601A (POWER ON Ⓗ :ON)
Q4682 2SC1959Y (5V REG.) 5.9 5.2 5.9
Q4683 2SC1959Y (5V REG.) 5.9 5.1 5.9
C4604 0.01
Q3010 2SC1959Y (5V REG.) 5.9 5.1 5.9
C4683 0.01
R4682 470
C4684 6V47
D4682 MA4056NH
Q4681 2SC1959Y (12V REG.) 15.6 12.2 12.9
C4681 0.01
Q2501 2SD1273 (12V REG.) 15.6 12.3 12.9
R2504 6800
C2512 0.01
C2514 25V4.7
D2501 MA4130NL
R6025 470
R6026 470
R6027 470
R6028 8200
Q6002 2SD601A (BUFFER) 11.9 7.5 8.2
R6024 2200
C6019 0.01
Q6001 2SD601A (5V REG.) 7.5 5.7 6.4
C2013 6V330
D6001 MA165
TW1004
D6003 MA700A
R6008 1K
B6001 CR2354-1GUF
D6005 MA165
Q2002 2SD601A (5V REG.) 6.1 5.1 5.8
Q7602 2SC1959Y (5V REG.) 6.1 5.1 5.8
R6035 1800
C2016 0.01
C6013 6V47
D6002 MA4056NH

L7607 0
C7617 6V47
C7618 0.01
(A11) LB7601 0
C7610 1000P
L7608 27u:A/B/C/D/E 33u:F
(A10)
L7605 10u
C7616 6V47
R7608 100
C7607 33P
R7607 100
C7606 33P
R7611 330
R7601 330
C7601 50V1
D7602 MA4300NM
L7601 10u
C7605 6V47
C7608 0.01
(A9)
(A8)
(A7)
(A6)
L7603 0
(A/B/F) L7604 0:A 2.2u:B/F
(C/D/E)
(A/B/F) L7602 0:A 10u:B/F
(C/D/E)
(A5)
(A4)
(A3)
(A2)
(A1)

PK7601
1 SIF/QPSK
2 GND
3 TUNER AUDIO (N)
4 —
5 —
6 —
7 AUDIO 5V
TO DECODER PACK PK7301(F-1):A TO NICAM DECODER PACK PK7301(D-1):B/F

R7603 0:A 100:B/F
R7602 0:A 100:B/F
PK7602
1 IIC CLOCK
2 IIC DATA
3 GND
4 TUNER AUDIO (R)
5 GND
6 TUNER AUDIO (L)
TO DECODER PACK PK7302(D-1):A TO NICAM DECODER PACK PK7302(C-1):B/F

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
POWER SUPPLY/RF SECTION
SCHEMATIC DIAGRAM

G F E D C B A
1 2 3 4 5 6 7 8 9 10

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

HOT

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓣ :TO TIMER SECTION

P1102
(TO AC CABLE)
AC (A) 1
AC (N) 2

F1101
VSF0243C16

D1110
ERZVA5Z471

(C)
LB1211
J0JHC0000012

(A/B/D/E/F)
LB1121
0

C1121
330P

(A/B/D/E/F)
L1121
VLF1498G0R5

L1120
VLF1498G0R5:
A/B/D/E/F
ELF15N003A:C

C1120
0.068:
A/B/D/E/F
0.033:C

D1140
DF80S-6622

(C/D/E/F)
C1140
400V68

(A/B)
C1141
400V33

T1150
G4D2A0000051:
A/B/D/E/F
G4D2A0000101:C

D1280
11EQS04

C1280
10V100

HEATER (-) Ⓣ
HEATER (+) Ⓣ

D1270
MA185

C1270
50V56

UNREG -29V Ⓣ

D1250
ERA85-009V5:
A/B/D/E/F
11EQS06:C

D1251
ERA85-009V5:
A/B/D/E/F
11EQS06:C

L1250
22u

C1250
16V1200:
A/B/D/E/F
25V820:C

C1251
16V100:
A/B/D/E/F
25V100:C

R1200
10K:
A/B/D/E/F
27K:C

R1207
27K
(C)

UNREG 15V ⓇⓈ

D1260
11EQS04

D1261
11EQS04

L1260
22u

C1260
10V1800

C1261
10V220

UNREG 6V ⓇⓈ

D1230
MA185

C1230
50V56

D1180
MA7510

UNREG 38V Ⓡ

GND Ⓡ

TO BOTTOM PLATE

(A/B/D/E/F)
Q1153
2SK2876
(VOLTAGE CONTROL)
648
405
-152

R1162
1K

R1163
100

C1155
270P:
A/B/D/E/F
330P:C

C1210
3300P

(C)

LB1210
0:A/B/D/E/F
J0JKB0000028:C

R1150
1M

R1154
1M

LR1150
VLP0392

LB1120
J0JKB0000028

C1123
F1BAF1020020

Q1150
2SK2645:
A/B/D/E/F
B1DADT000002:C
(VOLTAGE CONTROL)
648
2.2
0

C1154
0.022

R1153
330

R1155
100K

D1150
AU01ZV2

R1161
100
2.2
0

Q1152
2SC3311A
(VOLTAGE CONTROL)

R1160
0.47(1W):
A/B/D/E/F
0.33(1W):
C

Q1151
2SD1992A
(VOLTAGE CONTROL)
2.2
0.3

R1157
1600:
A/B/D/E/F
1500:C

D1157
MA4027L

C1151
0.047

D1155
MA165

C1153
0.1

R1159
3.3:
A/B/D/E/F
0:C

R1158
330

(C)
C1156
0.1

(A/B/D/E/F)
D1152
MA185

(C)
D1159
MA185

(A/B/D/E/F)
C1152
0.01

D1158
0:A/B/D/E/F
MA185:C

Q1200
PC123ZY2
16.3
0.9
6.0
4.9

R1156
33:A/B/D/E/F
330:C

R1206
270

R1205
2200

IC1200
uPC1093J
4.6
2.5

C1200
0.1

R1204
12K:
A/B/D/E/F
4700:C

R1203
24K:
A/B/D/E/F
30K:C

(C)
R1208
27K

R1209
27K

R1202
2200

NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚

NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
POWER TRANSFORMER SECTION SCHEMATIC DIAGRAM

AUDIO SIGNAL PATH

L7302 1u

X7302 VSX0953

C7316 0.1 · R7327 8200 · R7325 0

TEST1 (22) · VDDA2 (21) · VSSA2 (20) · VDDR2 (19) · 1 REF (18) · TEST2 (17) · TP3 (16) · XTAL I (15) · XTAL O (14) · ADDR1 (13) · PCLK (12)

SIF2 (23) · VREF1 (24) · SIF1 (25) · CRESET (26) · VSSA3 (27) · VDDA3 (28) · SCL (29) · SDA (30) · SDO (31) · WS (32) · SCK (33)

INPUT SWITCH AGC, ADC · FM/AM DEMODULATION · IDENTIFI-CATION · IIC BUS INTERFACE · IIC BUS INTERFACE

NICAM DEMODULATION · DEMATRIX · NICAM DECODER · 2 CHANNEL ANALOG/ SATELLITE DECODER · DIGITAL SELECTOR · LEVEL ADJUST · POST FILTER 3 DACS · 2 CHANNEL OUTPUT BUFFERS · ANALOG CROSSBAR SWITCH · MONO CHANNEL OUTPUT BUFFERS

TP1 (11) · NICAM (10) · TP2 (9) · VDEC2 (8) · VSSD2 (7) · VDDD1 (6) · VSSD1 (5) · VSSA1 (4) · VDDA1 (3) · OUT R (2) · OUT L (1)

SYS CLK (34) · VDDD3 (35) · VSSD3 (36) · P1 (37) · MONO IN (38) · EXTIR (39) · EXTIL (40) · VREF2 (41) · P2 (42) · OUT M (43) · VSSA4 (44)

IC7301 TDA9874AH

PK7301
- QPSK/SIF 1
- GND 2
- TUNER AUDIO (N) 3
- 4
- 5
- 6
- TUNER 5V 7

TO POWER SUPPLY/RF SECTION PK7301 (B-10)

PK7302
- SYS IIC CLOCK 1
- SYS IIC DATA 2
- GND 3
- TUNER AUDIO (R) 4
- GND 5
- TUNER AUDIO (L) 6

TO POWER SUPPLY/RF SECTION PK7302 (A-10)

C7307 0.01 · R7302 0 · C7311 0

IC7302 PST7043 (RESET) IN GND OUT

C7343 2200P · L7301 0

C7308 50V2.2 · C7312 22P

R7305 100 · R7306 100

FL7301 VLF0633

C7304 6V100 · C7301 0.01

C7341 4700P · C7342 4700P

C7315 0.1

R7316 10K · LB7303 0 · TL7301 · TL7303 · C7313 0.1

C7318 6V47 · TL7304

R7324 220 · C7317 16V10 · R7328 220 · C7319 16V10 · R7329 220 · C7320 16V10

LB7301 VLP0150 · C7325 0.1 · C7324 0.1

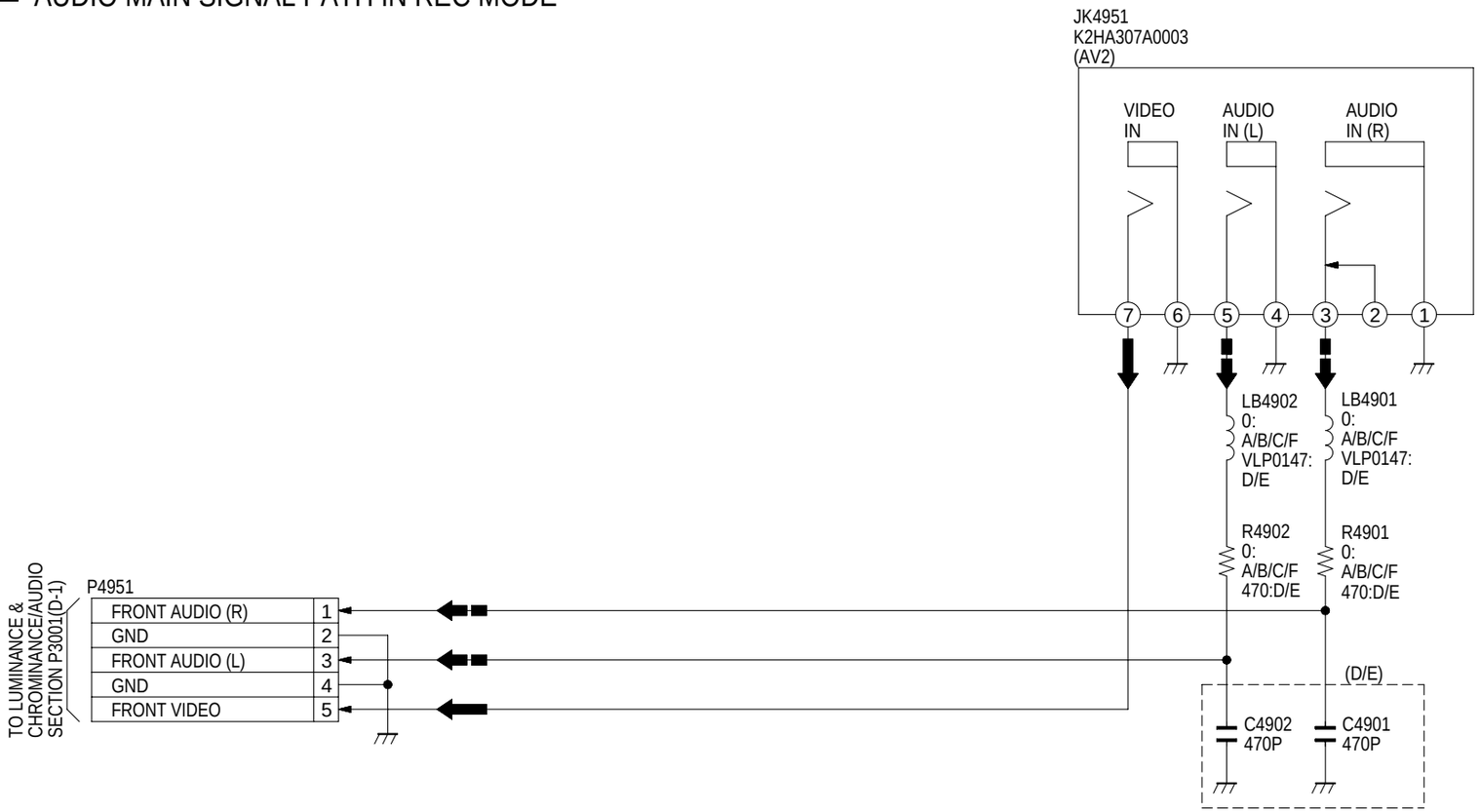
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630EA/BD/BDX
NICAM DECODER PACK SCHEMATIC DIAGRAM

VIDEO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN REC MODE



NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
FRONT SCHEMATIC DIAGRAM

Ⓡ :TO POWER SUPPLY/RF SECTION
Ⓢ :TO SYSTEM CONTROL & SERVO SECTION
Ⓥ :TO LUMINANCE & CHROMINANCE/AUDIO SECTION

AUDIO MAIN SIGNAL PATH IN REC MODE

AUDIO MAIN SIGNAL PATH IN PLAYBACK MODE

Ⓢ FM MUTE Ⓗ
Ⓢ IIC CLOCK
Ⓢ IIC DATA
Ⓥ FSC
Ⓡ SYSTEM CTL 5V
Ⓡ N.SW 5V
Ⓡ AUDIO 5V
Ⓡ AV 12V
Ⓡ GND
Ⓥ AUDIO OUT (R)
Ⓥ AUDIO OUT (L)
Ⓥ AUDIO IN (N)
Ⓥ AUDIO OUT (N)
Ⓡ RFC AUDIO OUT
Ⓡ TUNER AUDIO (R)
Ⓥ AUDIO IN (R)
Ⓥ FRONT AUDIO (R)
Ⓡ TUNER AUDIO (L)
Ⓥ AUDIO IN (L)
Ⓥ FRONT AUDIO (L)
Ⓥ AUDIO HEAD COM
Ⓥ AUDIO HEAD R
Ⓥ AUDIO HEAD L
Ⓢ A.HEAD SW
Ⓢ ABS NORMAL
Ⓢ D.FM REC Ⓗ

IC4501 AN3656NFBPBV

IIC BUS INTERFACE
PNR RCH
PNR LCH
AGC & SWITCH
SWITCH RCH
SWITCH LCH
OUTPUT SELECT SWITCH RCH
OUTPUT SELECT SWITCH LCH
FM MODULATOR/ DEMODULATOR
BPF
LPF
AGC
PREAMP & SWITCH
DET
NORMAL OUTPUT SWITCH
INPUT SWITCH RCH
INPUT SWITCH LCH
VCO-FO
VCC
GND(R)
REC AGC ADJ.
MUTE CONTROL
REC AGC DET
ENV.DET OUT
REC DC2
VREF
GND (L)
VCC2
GND

QR4501 UN2215 (FM MUTE Ⓗ :ON)
QR4504 UN2115 (BUFFER)
QR4505 UN2215 (MUTE)
QR4506 UN2215 (MUTE)
QR4651 UN2215 (MUTE)

TW4501
TW4502
TL4507
D4501 MA165

L4501 1.2u
R4603 3300
R4530 4700
R4585 510
C4581 0.047
C4515 6V33
C4536 0.01
C4517 6V100
C4516 16V10
R4539 330
R4540 330
R4538 33K
R4508 1K
C4514 16V10
C4513 6V22
R4534 120K
C4535 0.015
C4512 0.22
R4500 0
R4527 680
R4541 470
R4542 470
C4519 16V10
C4520 16V10
C4521 16V10
C4522 6V22
C4538 0.01
C4525 16V47
C4601 16V10
R4601 22K
C4603 1500P
C4524 0.1
R4602 6800
R4651 680
C4511 0.1
C4510 0.01
LB4562 0
C4530 150P
C4531 150P
C4509 0.01
LB4561 0
C4508 0.033
C4534 0.015
C4507 6V22
C4506 16V10
C4502 16V10
C4503 16V10
C4504 16V10
R4586 510
R4532 4700
C4582 0.047
C4505 6V33
R4581 33K
R4583 56K
R4505 3900
R4502 51K
R4506 3900
R4603 51K
R4582 33K
R4584 56K
R4510 3900
R4509 51K
R4512 3900
R4511 51K

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH PAL COLOUR SIGNAL.(SP MODE)

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
Hi-Fi AUDIO SECTION SCHEMATIC DIAGRAM

AUDIO SIGNAL PATH

TO POWER SUPPLY/RF SECTION PK7301 (B-10)

PK7301
SIF 1
GND 2
TUNER AUDIO (N) 3
4
5
6
TUNER 5V 7

TO POWER SUPPLY/RF SECTION PK7302 (A-10)

PK7302
SYS IIC CLOCK 1
SYS IIC DATA 2
3
TUNER AUDIO (R) 4
GND 5
TUNER AUDIO (L) 6

IC7301
TDA9873H

AF SWITCH
STEREO DECODER STEREO ADJUST
POWER SUPPLY
AF AMPLIFIER 1
AF AMPLIFIER 2
FM DEMODULATOR NARROW-BAND PLL SC1
FM DEMODULATOR NARROW-BAND PLL SC2
DIGITAL IDENTIFICATION PILOT NARROW-BAND PLL
IIC BUS TRANSCEVER

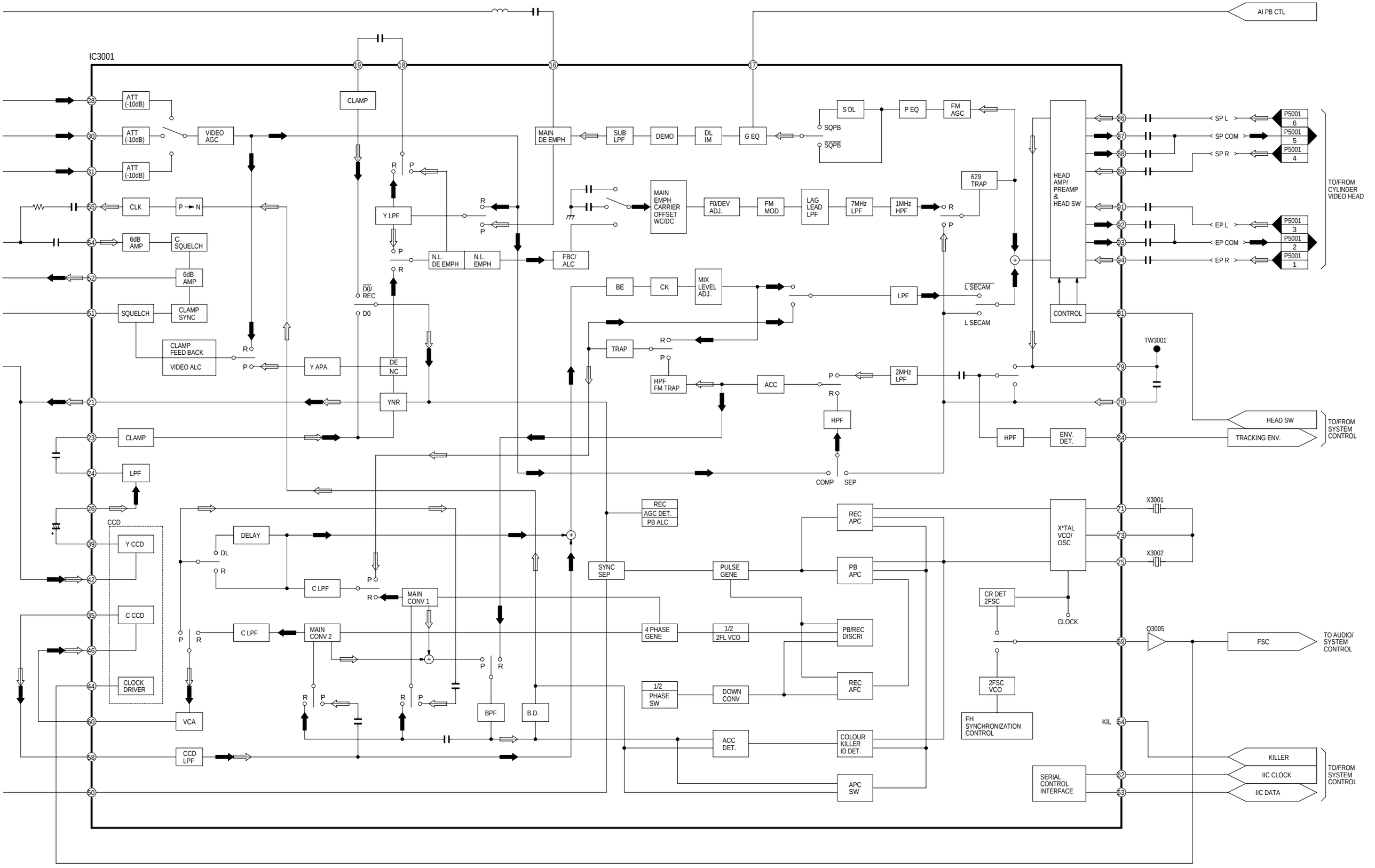
TL7301
TL7302
TL7303

R7315 1500
C7318 16V10
R7316 6800
R7314 3600
C7326 1500P
C7316 0.1
C7317 6V100
R7309 220
C7319 16V47
C7320 4700P
C7321 50V0.47
C7322 50V0.47 (N)
R7307 6800
C7327 1500P
C7328 1500P
R7308 6800
C7313 16V10
C7312 16V10
R7318 1500
R7320 3600
R7319 3600
R7317 1500
C7310 0.01
C7309 0.01
C7323 0.1
R7311 7500
R7312 100
R7313 100
C7308 50V0.47 (N)
C7301 0.01
R7301 0
C7303 50V0.47 (N)
C7302 50V0.47 (N)
R7304 4700
VR7301 10KB
R7306 5600
C7307 680P
X7301 VSX1086
C7306 0.012
R7305 9100
C7305 0.012
C7304 680P

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

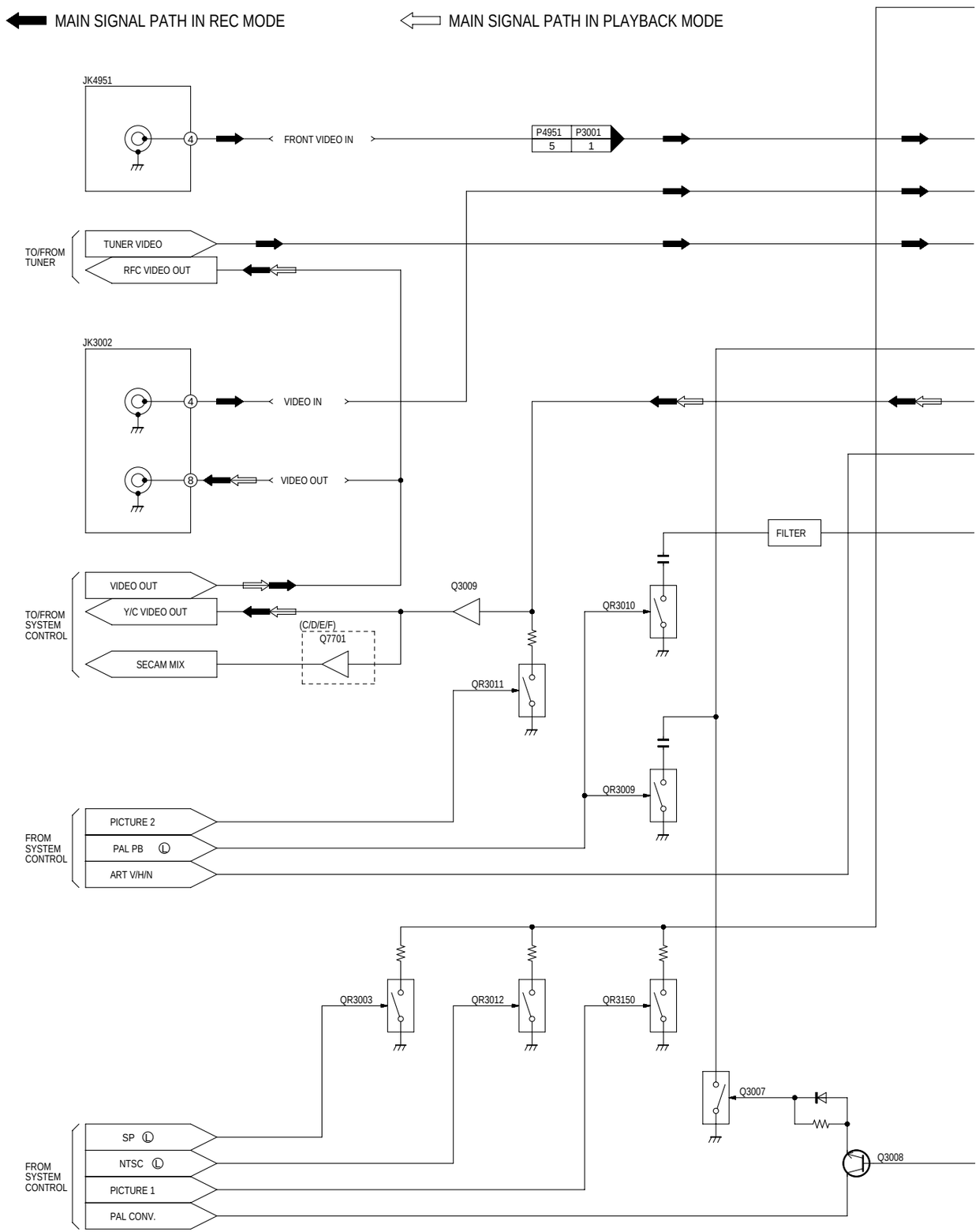
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A
DECODER PACK SCHEMATIC DIAGRAM

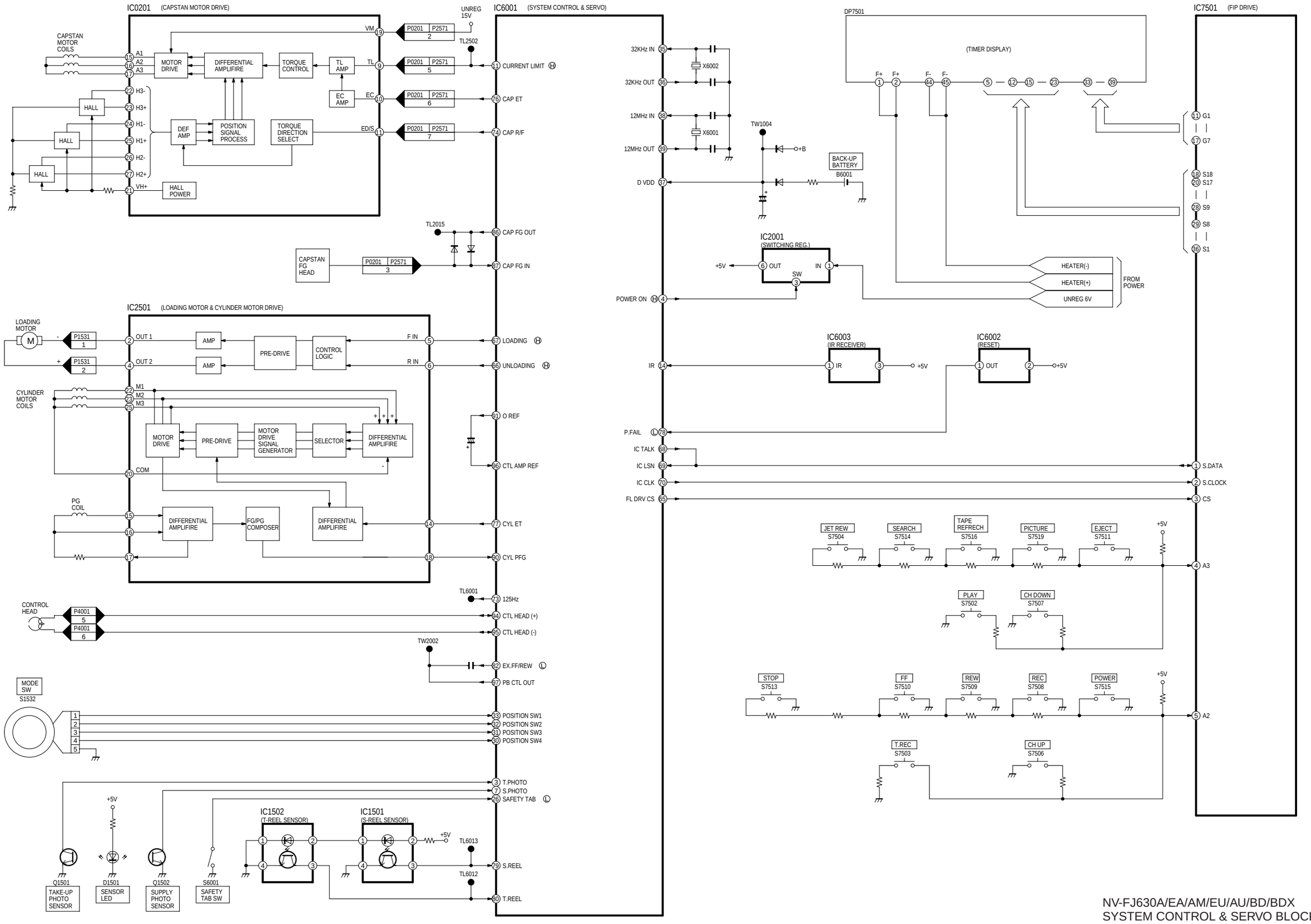


NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE BLOCK DIAGRAM

NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE BLOCK DIAGRAM



NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE BLOCK DIAGRAM



NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO BLOCK DIAGRAM

MAIN SIGNAL PATH IN REC MODE

MAIN SIGNAL PATH IN PLAYBACK MODE

IC4501

JK4951 (FRONT JACK)

IN (R) 3 — FRONT AUDIO(R) — P4951 1 / P3001 5 — 10

IN (L) 5 — FRONT AUDIO(L) — P4951 3 / P3001 3 — 15

JK3002 (REAR JACK)

IN (R) 2 — AUDIO IN (R) — TL4506 — 9

IN (L) 3 — AUDIO IN (L) — TL4505 — 14

OUT (R) 6 — AUDIO OUT (R) — TL4504 — QR4505 MUTE — 53

OUT (L) 7 — AUDIO OUT (L) — TL4503 — QR4506 MUTE — 57

TO TUNER — RFC AUDIO OUT — QR4651 MUTE — 59

(A/B/F)

FROM DECODER — TUNER AUDIO (R) — 8

FROM DECODER — TUNER AUDIO (L) — 13

(C/D/E)

IC3001

FROM TUNER/ DECODER — TUNER AUDIO (N) — 9

TO/FROM AC HEAD — A.HEAD (W) — 4 — REC EQ — MUTE — VCA — R/P — 8 — 61

TO/FROM AC HEAD — A.HEAD (R) — 2 — 99

FROM SYSTEM CONTROL — FM MUTE Ⓗ

MUTE — 11 — 62

MUTE CTL — 99

MUTE CTL — 36

INPUT SELECT SWITCH RCH

INPUT SELECT SWITCH LCH

OUTPUT SELECT SWITCH RCH

OUTPUT SELECT SWITCH LCH

PNR RCH

PNR LCH

NORMAL SELECT SWITCH

AGC & SWITCH

FM MODULATOR/ DEMODULATOR

LPF

BPF

BPF

LPF

AGC & SWITCH

FM MODULATOR/ DEMODULATOR

AGC

IIC BUS INTERFACE — 42 IIC CLOCK — 43 IIC DATA — TO/FROM SYSTEM CONTROL

VCO F0 — 45 — FSC — FROM LUMINANCE & CHROMINANCE

27 — AUDIO H.SW — FROM SYSTEM CONTROL

TW4502

30 — D.FM REC Ⓗ — FROM SYSTEM CONTROL

PREAMP & SWITCH — 29

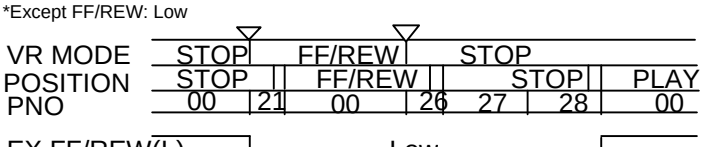
24 — P5001 8 — L

21 — P5001 9

22 — P5001 10 — R

Hi-Fi AUDIO HEAD

NV-FJ630A/EA/AM/EU/AU/BD/BDX
AUDIO BLOCK DIAGRAM

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
75	TAPE REFRESH (H)	O	Terminal for the signal that changes FE oscillation frequency (130KHz/70KHz) for TAPE REFRESH.	Low	Low	Low
76	CAP.ET	O	Power supply terminal for the capstan motor control. (Conpared with the driver reference voltage, when it is "low", current will be cut. Also when it is "high", the rotation speed will be accelerated.)	High PWM=0V	Low	High PWM=0V
77	CYL.ET	O	Power supply terminal of the cylinder motor control: (Conpared with the driver reference voltage, when it is "high", current will be cut. Also when it is "low", the rotation speed will be accelerated. (Max:2.8V))	Low PWM=2.800 V	Low	Low PWM=2.800 V
78	P.FAIL(L)	I	Input terminal for the power failar detection. Power failar : "Low".	In	In	In
79	S.REEL.PULSE	I	Input terminal of the S.Reel pulse.	In	In	In
80	T.REEL.PULSE	I	Input terminal of the T.Reel pulse.	In	In	In
81	BIAS(L)	O	Linear Audio REC/ERASE ON/OFF control terminal. (FULL ERASE ON/OFF control is combined with) *When recording the linear audio, the "Low" is output synchronizing with D.REC signal for IC3001. Output mode: REC(ADUB/AV-INSERT) *When the recording starts, "Low" is output at 140-160m sec. after D.REC (H) for IC3001has been shifted to "High" from "Low". *When the recording stops, the "High" is output at 0-20m sec. after D.REC for IC3001has being shifted to "low" from "High".	In	In	In
82	EX.FF/REW (L)	O	Control signal filter select terminal in FF/REW mode. *During FF/REW: Hi-Z *Except FF/REW: Low  *Refer to FF/REW (Hi-z) output timing of the Z-mechanism regarding to control spec. of this terminal. *When the unit becomes into FF/REW mode , the input is set. *In STOP mode, the setting is released after shift to STOP3 for control of STOP. However, if the CTL amp gain is 5 (=60dB) or 7 (=70dB) when starting of FF/REW, Low is output compulsorily automatically.	Low	Low	Low
83	NC	O	Low fix.	Low	Low	Low
84	NC	O	Hi-Z fix. (with pull down resistor)	In	In	In
85	GND	I	Low fix.	In	In	In
86	FG.AMP.OUT	O	Output terminal for the Capstan FG AMP signal.	Out	Out	Out
87	FG.AMP.IN	I	Input terminal for the Capstan FG AMP signal.	In	In	In
88	GND(A)	-	GND for Analogue circuit.	-	-	-
89	NC	I	Connected to GND.	In	In	In
90	CYL.PFG	I	Input terminal for the Cylinder PG/FG.	In	In	In
91	OREF	O	1/2 VDD reference voltage output terminal for the Analogue AMP.	Out	Out	Out
92	IREF	I	1/2 VDD reference voltage input terminal for the Analogue AMP.	In	In	In
93	GND	I	GND	In	In	In
94	CTL.HEAD(-)	I/O	I/O terminal for the Control head (-)	In/Out	In/Out	In/Out
95	CTL.HEAD(+)	I/O	I/O terminal for the Control head (+)	In/Out	In/Out	In/Out
96	CTL.AMP.REF	I	Capacitor connection terminal for reference of the control AMP.	In	In	In
97	PB.CTL.OUT	O	Output terminal for the Control AMP.	Out	Out	Out
98	5V(A)	-	Power supply terminal for Analogue AMP.	-	-	-
99	5V(AD)	-	Reference power supply terminal for the AD/8bit DA	-	-	-
100	NORM/SERV/T2/TES	O	Factory mode/ Service mode setting terminal. Input Voltage / Mode Over 4.0V / Normal Over 2.0V and less than 4.0V / Service Over 1.0V and less than 2.5V / Test 2 Less than 1.0V / Test 1	In	In	In

No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
51	KILLER	I	When a signal that V-sync is 50Hz is putting in or playing back. * PAL/MESECAM distinction result input terminal. Low is put into this terminal: PAL High is put into this terminal: Dipend on SQPB/MESECAM/VHS input terminal. When a NTSC signal is putting in. * Input terminal for distinction result of agreement between Fsc of input signal and frequency of OSC for sub-carrier that being chosen by IC3001. Low is put in: Agree High is put in: Different	In	In	In
52	CVOUT	O	Output terminal for the composite video signal.	Out	Out	Out
53	5V(OSD)	-	Power supply terminal for OSD	-	-	-
54	HLF	I	LPF connection terminal for slicer.	In	In	In
55	VHOLD	I	Capacitor connection terminal of the Reference voltage generator circuit for the slicer.	In	In	In
56	CVIN(EDS)	I	Composite video signal input terminal for the slicer.	In	In	In
57	GND	-	Connect to the GND (Test terminal "A" in the factory).	-	-	-
58	A.SEARCH (L)	I/O	AGC gain selection signal for tuner CH selection. During digital AFC is working at TUNER PRESET mode: Low (AGC is high speed). Other than above: Hi-Z (AGC is normal speed).	Low	Low	In
59	SECAM MIX (For other than NV-FJ630A/EA)	I	SECAM CHROMA signal input terminal for SECAM SIGNAL SUPER IMPOSE.	Low	Low	Low
	NC (For NV-FJ630A/EA)	O	Low fix.	Low	Low	Low
61	PAL 9H	O	PAL 9H: High is output.	Low	Low	Low
62	SW2	O	(For NV-FJ630A/EA) High fix. (For other than NV-FJ630A/EA) AUDIO SYSTEM = BG, DK: High is output. AUDIO SYSTEM = I, M: Low is output.	Low	Low	Low
63	VBI2	O	NAVI writing terminal. * During NAVI data being written (During recording when JET NAVIGATOR is ON). OSD letters (Including the masking) being written : High Except OSD letters being written : Low * Other than above: Hi-z	Low / Hi-Z	Low / Hi-Z	Low / Hi-Z
64	VBI1/CHARA	O	Terminal for both NAVI Writing and OSD REC Writing. 1. During NAVI writing (During recording in JET NAVIGATOR is ON) At NAVI data "H" being written : High is output At NAVI data "L" being written : Low is output At except NAVI data being written : Low is output 2. During OSD REC (During recording in OSD REC is ON) During OSD letters (Except the masking) being written : High is output Except OSD letters being written : Low * Other than above condition : Hi-z	Low / Hi-Z	Low / Hi-Z	Low / Hi-Z
65	FLD_CS	O	Chip select signal for FIP driver. *Active: "Low" *Non-active: "High"	(Normal ope.)	Low	Low
66	UNLOADING(H)	O	Control terminal for the Unloading operation.	Low	Low	Low
67	LOADING(H)	O	Control terminal for the loading operation.	Low	Low	Low
68	IC.DATA.OUT	O	Timer-Bus signal for peripheral ICs control: Data output	(Normal ope.)	In	Hi-Z
69	IC.DATA.IN	I	Timer-Bus signal for peripheral ICs control: Data input	(Normal ope.)	In	In
70	IC.DATA.CLK	O	Timer-Bus signal for peripheral ICs control:Clock outout	(Normal ope.)	In	Hi-Z
71	IIC.CLK	O	Serial communication terminal (IIC) for IC3001/FM audio IC.	(Normal ope.)	In	Hi-Z
72	IIC.DATA	I/O	Serial communication terminal (IIC) for IC3001/FM audio IC.	(Normal ope.)	In	Hi-Z
73	125Hz/ROM.CORE	O	ROM Correction confirmation mode: * ROM correction setting bit is "ON": "High". * ROM correction setting bit is "OFF": "Low" is existed. (Other than ROM Correction confirmation mode, this terminal is the output terminal of internal clock for main clock adjustment.:Outputting the 125Hz.)	(Normal ope.)	Low	Low
74	CAP R/F	O	The rotation direction control terminal of the capstan driver. *RVS="High" *FWD="Low".	Low	Low	Low

<table>
<tr><th>No</th><th>Terminal Name</th><th>I/O</th><th>Description</th><th>P.OFF</th><th>P.Failure</th><th>Reset/ Release</th></tr>
<tr><td>26</td><td>STAB(L)</td><td>I</td><td>SAFETY TAB DETECTION
*With SAFETY TAB: "Low"
*Without SAFETY TAB:"High"</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>27</td><td>ABS_NORMAL</td><td>I</td><td>This terminal has two purposes.
1.Compulsory Normal Audio selection. 2.Trigger for Audio auto Adjustment.
*Compulsory Normal Audio sel.:"Low" level.
(ADUBPS/HiFi_Audio envelope being low.)
*Other than above : "High" level.</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>28</td><td>NTSC (L)</td><td>O</td><td>PLAYBACK MODE…..50Hz:"High" 60Hz:"Low"</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>29</td><td>AVR (L)</td><td>I/O</td><td>Simplified AI playback ON/OFF control.</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>30</td><td>POS.SW4</td><td>I</td><td rowspan="4">Input terminal for mechanism position.
<table><tr><th>SW4</th><th>SW3</th><th>SW2</th><th>SW1</th><th>Position Name</th></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td><td>EJECT Position</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>DOWN Position</td></tr><tr><td>0</td><td>0</td><td>1</td><td>1</td><td>R-REW Position</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0</td><td>LOAD Position</td></tr><tr><td>0</td><td>1</td><td>0</td><td>1</td><td>REV Position</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0</td><td>PLAY Position</td></tr><tr><td>0</td><td>1</td><td>1</td><td>1</td><td>P_OFF Position</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0</td><td>STOP_R Position</td></tr><tr><td>1</td><td>0</td><td>0</td><td>1</td><td>STOP_F Position</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0</td><td>FF/REW Position</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0</td><td>FF2 Position</td></tr><tr><td>1</td><td>1</td><td>1</td><td>1</td><td>Intermediate Positions between each Positions</td></tr></table></td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>31</td><td>POS.SW3</td><td>I</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>32</td><td>POS.SW2</td><td>I</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>33</td><td>POS.SW1</td><td>I</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>34</td><td>RESET</td><td>I</td><td>RESET Terminal.</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>35</td><td>32KHz.IN</td><td>I</td><td>Sub clock (32.768KHz) osc. input terminal.</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>36</td><td>32KHz.OUT</td><td>O</td><td>Sub clock (32.768KHz) osc. output terminal</td><td>Out</td><td>Out</td><td>Out</td></tr>
<tr><td>37</td><td>5V(D)</td><td>-</td><td>VCC (5V) for Digital port</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>38</td><td>12MHz.IN</td><td>I</td><td>Main clock (12MHz) osc. input terminal.</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>39</td><td>12MHz.OUT</td><td>O</td><td>Main clock (12MHz) osc. output terminal.</td><td>Out</td><td>Out</td><td>Out</td></tr>
<tr><td>40</td><td>GND(OSC)</td><td>-</td><td>Digital GND for OSC circuit.</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>41</td><td>SW1</td><td>O</td><td>AUDIO SYSTEM (TUNER PRESET)=BG, I: High output
AUDIO SYSTEM (TUNER PRESET)=DK, M: Low output
For A: High fix.</td><td>Low</td><td>Low</td><td>Low</td></tr>
<tr><td>42</td><td>FM_MUTE</td><td>O</td><td>Audio mute control terminal.
High output (AUDIO MUTE).
The voltage is shifted to Hi-Z for reucing the current at 3 second after the power has been turned on .</td><td>Hi-Z</td><td>In</td><td>In</td></tr>
<tr><td>43</td><td>32K.START(L)</td><td>I</td><td>Clock souce selection terminal at reset starting.
*12/16MHz(High speed) :Connected to VCC (5V).
*32KHz(Slow speed) :Connected to Vss (0V).</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>44</td><td>LC.OSC.IN</td><td>I</td><td>Input terminal of the LC Oscillation (For OSD dot clock)</td><td>In</td><td>In</td><td>In</td></tr>
<tr><td>45</td><td>LC.OSC.OUT</td><td>O</td><td>Output terminal of the LC Oscillation (For OSD dot clock)</td><td>Out</td><td>Out</td><td>Out</td></tr>
<tr><td>46</td><td>GND</td><td>-</td><td>Connected to the GND (Test terminal "B" in the factory).</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>47</td><td>FSC.LPF</td><td>I</td><td>OSC Filter connection terminal for Internal sync generator.</td><td>In</td><td>Low</td><td>In</td></tr>
<tr><td>48</td><td>FSC.IN</td><td>I</td><td>Sub carrier (fsc) input terminal for sync generator.</td><td>In</td><td>Low</td><td>In</td></tr>
<tr><td>49</td><td>GND(OSD)</td><td>-</td><td>GND terminal for OSD circuit.</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>50</td><td>CVIN</td><td>I</td><td>Input terminal for composite video signal.</td><td>In</td><td>In</td><td>In</td></tr>
</table>

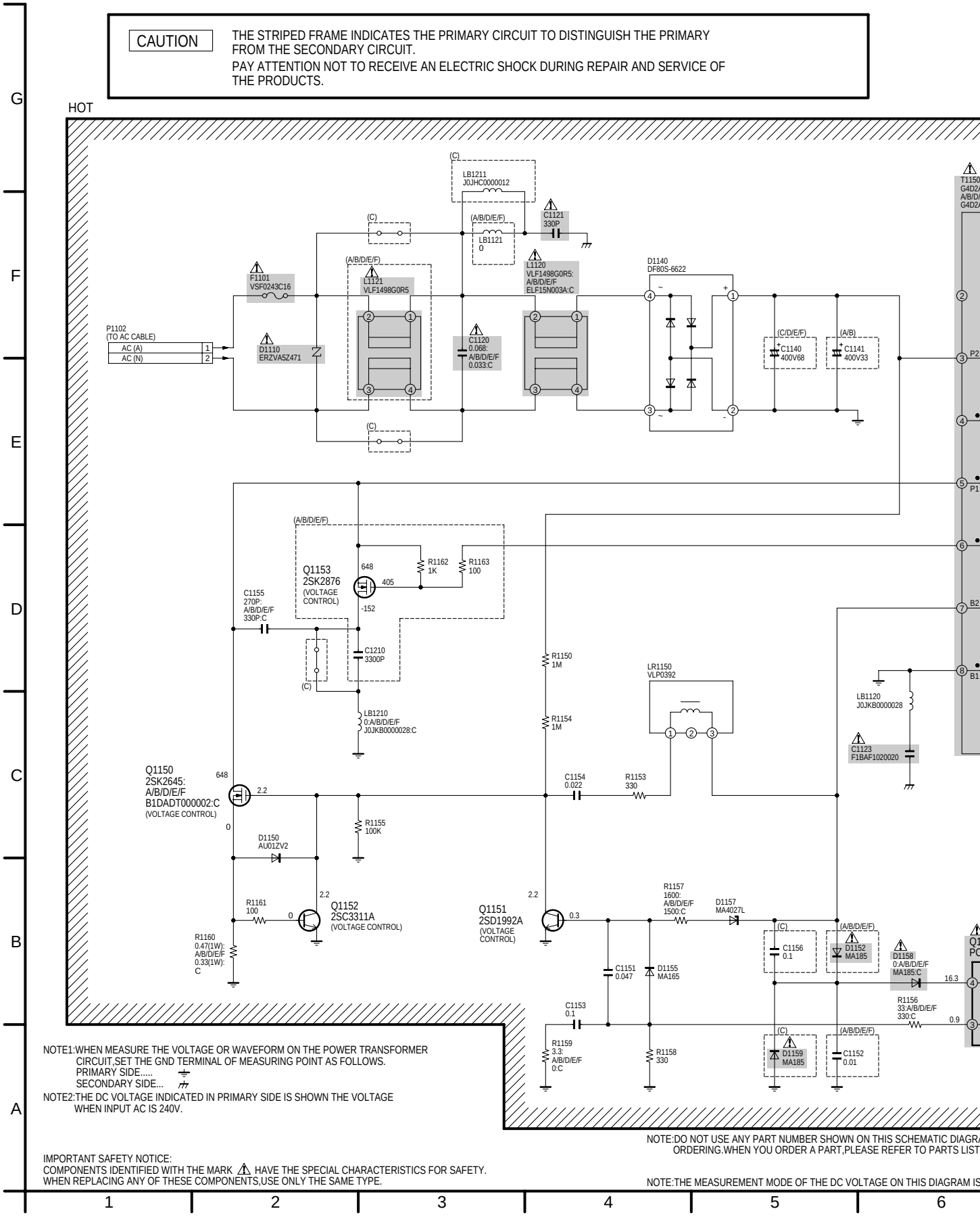
No	Terminal Name	I/O	Description	P.OFF	P.Failure	Reset/ Release
1	CODE1	I	AD input terminal for model setting.	In	In	In
2	CODE2	I	AD input terminal for model setting.	In	In	In
3	T-PHOT	I	Input terminal of the Tape Beginning sensor detection. *More than 2.6V : Black tape part. *Less than 2.4V :Trans. Tape part.	In	In	In
4	P.ON(H)	O	ON/OFF control terminal for the VCR Power. Power_ON : "High"	Low	Low	Low
5	SAFETY_CYL	I	REG 12V short detection signal. It is a measure for cylinder driver over heat by short. Perform detection process at 3 seconds after that the P.ON (H) signal at Pin 4 of IC6001 has been shifted from Low to High. [Detection method] When the terminal voltage is less than 3.0V during 3 seconds continuously, the power is turned off compulsorily. * When a cassette is in, the power is turned off after a few second delay for the mechanism initial function. * Key/Remote controller input is inhibited while the compulsory power off process.	In	In	In
6	T.S.CUREVE	I	Input terminal for "S-Curve" of Tuner AFC at channel selecting.	In	In	In
7	S-PHOT	I	Input terminal of the Tape End sensor detection. *More than 2.6V : Black tape part. *Less than 2.4V :Trans. Tape part.	In	In	In
8	NC	O	Low fix.	In	In	In/Low
9	TRACKING_ENVE	I	Input terminal of the Video envelope signal.	In	In	In
10	SQPB/SE/VHS	I	(For NV-FJ630A/EA) VV: VHS: 0 ~ 1.25V SQPB: over than 1.25V EE: VHS fix. (For other than NV-FJ630A/EA) VV: VHS: 0~1.25V SQPB: 60Hz & over than 1.25V 50Hz & over than 3.25V MESCAM: 50Hz & 1.25 ~ 3.25V EE: VHS: 50Hz & 0~1.25V 60Hz MESCAM: 50Hz & over than 1.25V	In	In	In
11	CURRENT.LIMIT	O	Control terminal for the Capstan current limit. (Output impedance: MIN:1K, TYP:2.5K, MAX:4.0K)	In DA=0V	Low	In DA=0V
12	NC	O	Low fix.	Low	Low	Low
13	ART.V/H/N	O	Output terminal for the Artificial V-sync. 1. In trick playback. Artificial V sync inserting timing : High Artificial H sync inserting timing : Hi-Z (M output) Except above conditions : Low 2. NAVI REC : Hi-Z 3. OSD REC : Hi-Z 4. Other than above conditions : Low	Low	Low	Low
14	REMOCON	I	Input terminal for the Remote Controller.	In	In	In
15	NC	O	Low fix.	Low	Low	Low
16	NC	O	Low fix.	Low	Low	Low
17	PAL_SQPB	O	50Hz Playback on SQPB: High output Other than above : Low output	Low	Low	Low
18	VIDEO.H.SW	O	Video head switching signal *L'/R="High" *R'/L="Low"	Low	Low	Low
19	AUDIO.H.SW	O	Head switching signal for Audio circuit.	Low	Low	Low
20	D.A.REC(H)	O	Recording control signal for the Linear Audio.	Low	Low	Low
21	PICT1	O	Control terminal for the Picture mode.	Low	Low	Low
22	PICT2	O	Control terminal for the Picture mode.	Low	Low	Low
23	PAL PB (L)	O	3.58NTSC (D6=0, D7=0 both of IC3001): High output Other than above : Low output	Low	Low	Low
24	NC	O	Control terminal for Hi-Fi audio REC.	Low	Low	Low
25	SP(L)	O	REC MODE DATA *N2H:"Low" *N6H:"High"	Low	Low	Low

8 SCHEMATIC DIAGRAMS

8.1. POWER TRANSFORMER SECTION IN MAIN SCHEMATIC DIAGRAM

CAUTION

THE STRIPED FRAME INDICATES THE PRIMARY CIRCUIT TO DISTINGUISH THE PRIMARY FROM THE SECONDARY CIRCUIT.
PAY ATTENTION NOT TO RECEIVE AN ELECTRIC SHOCK DURING REPAIR AND SERVICE OF THE PRODUCTS.

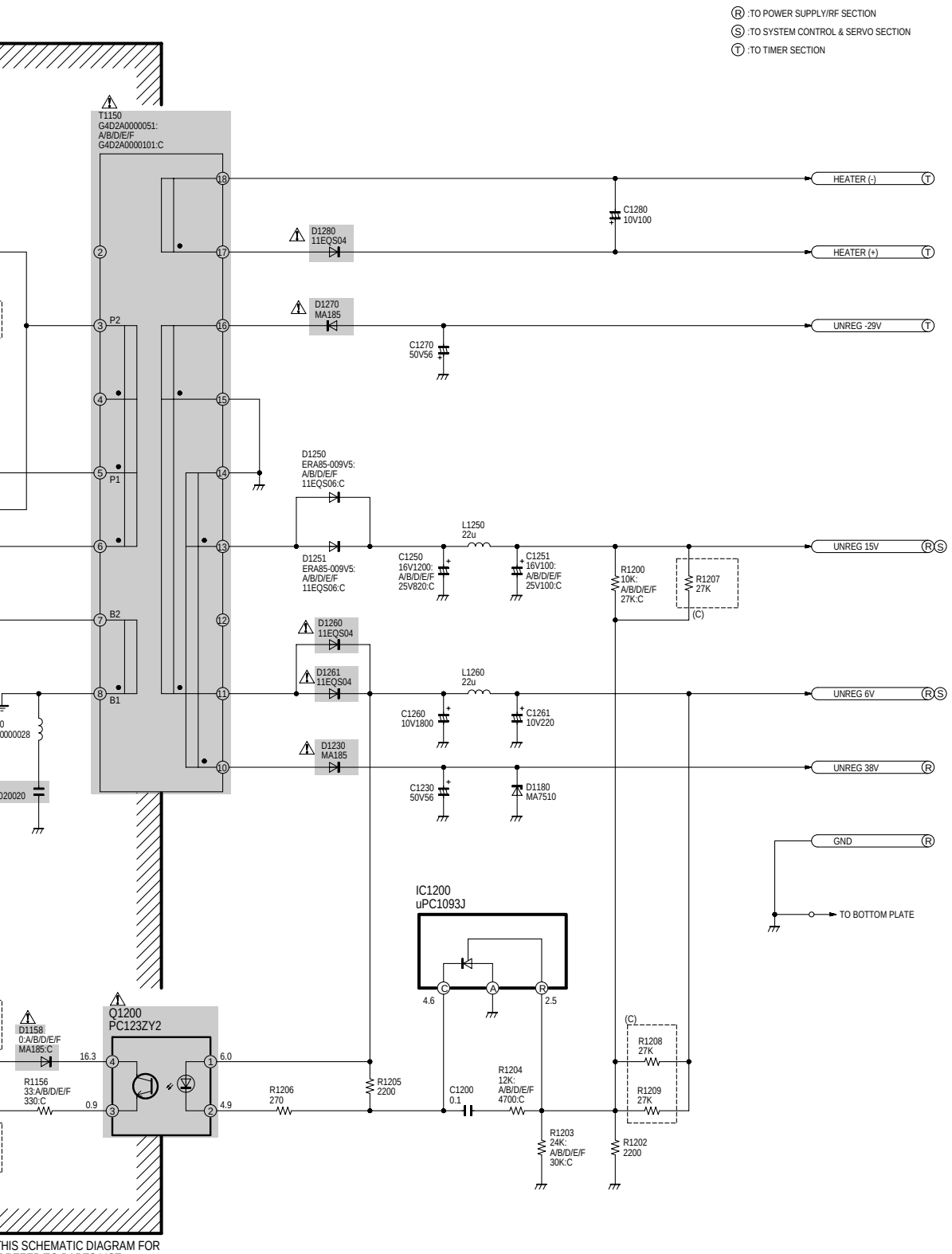


NOTE1:WHEN MEASURE THE VOLTAGE OR WAVEFORM ON THE POWER TRANSFORMER CIRCUIT,SET THE GND TERMINAL OF MEASURING POINT AS FOLLOWS.
PRIMARY SIDE..... ⏚
SECONDARY SIDE... ⏚
NOTE2:THE DC VOLTAGE INDICATED IN PRIMARY SIDE IS SHOWN THE VOLTAGE WHEN INPUT AC IS 240V.

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRA
ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,USE ONLY THE SAME TYPE.

NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS



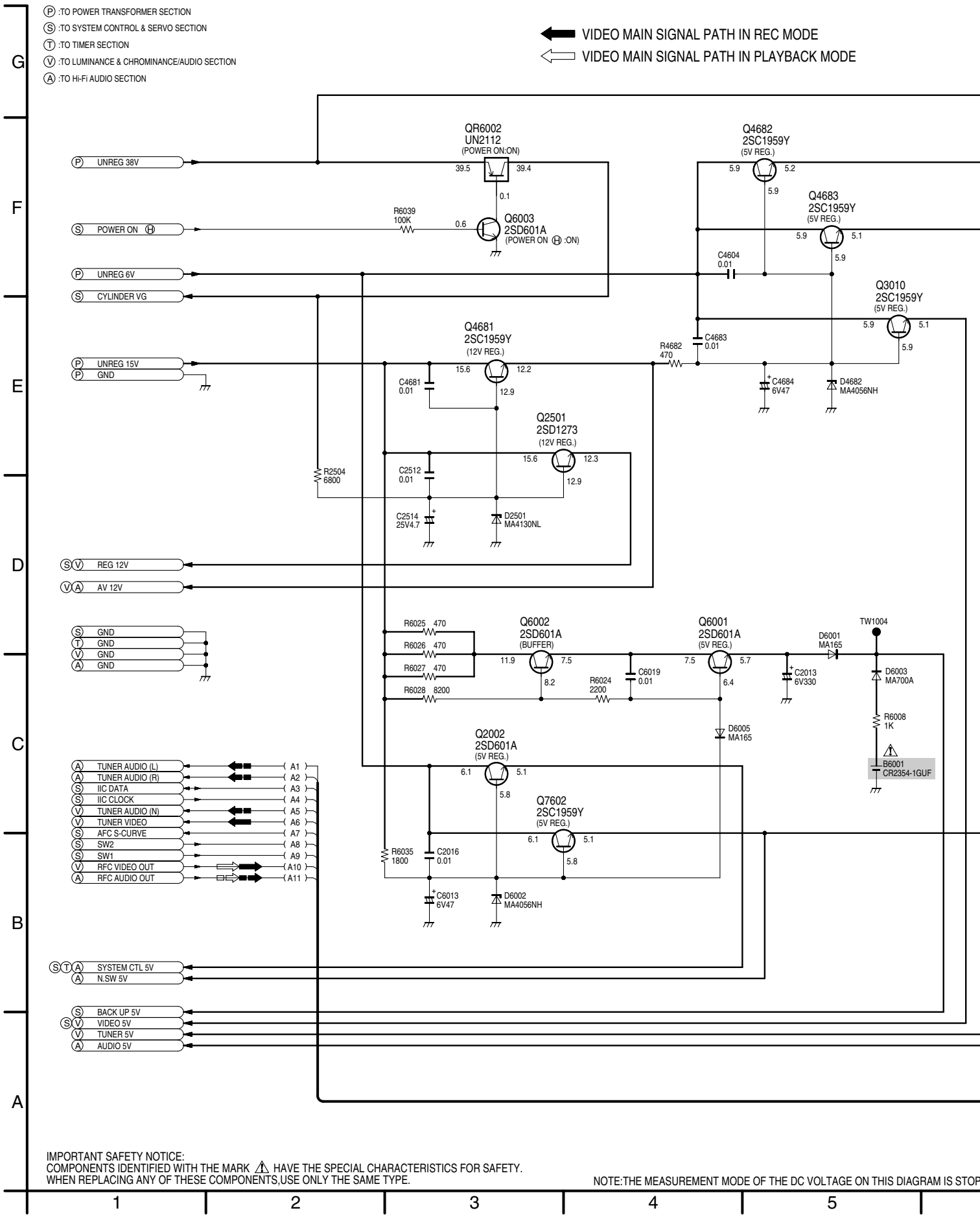
THIS SCHEMATIC DIAGRAM FOR
E REFER TO PARTS LIST.

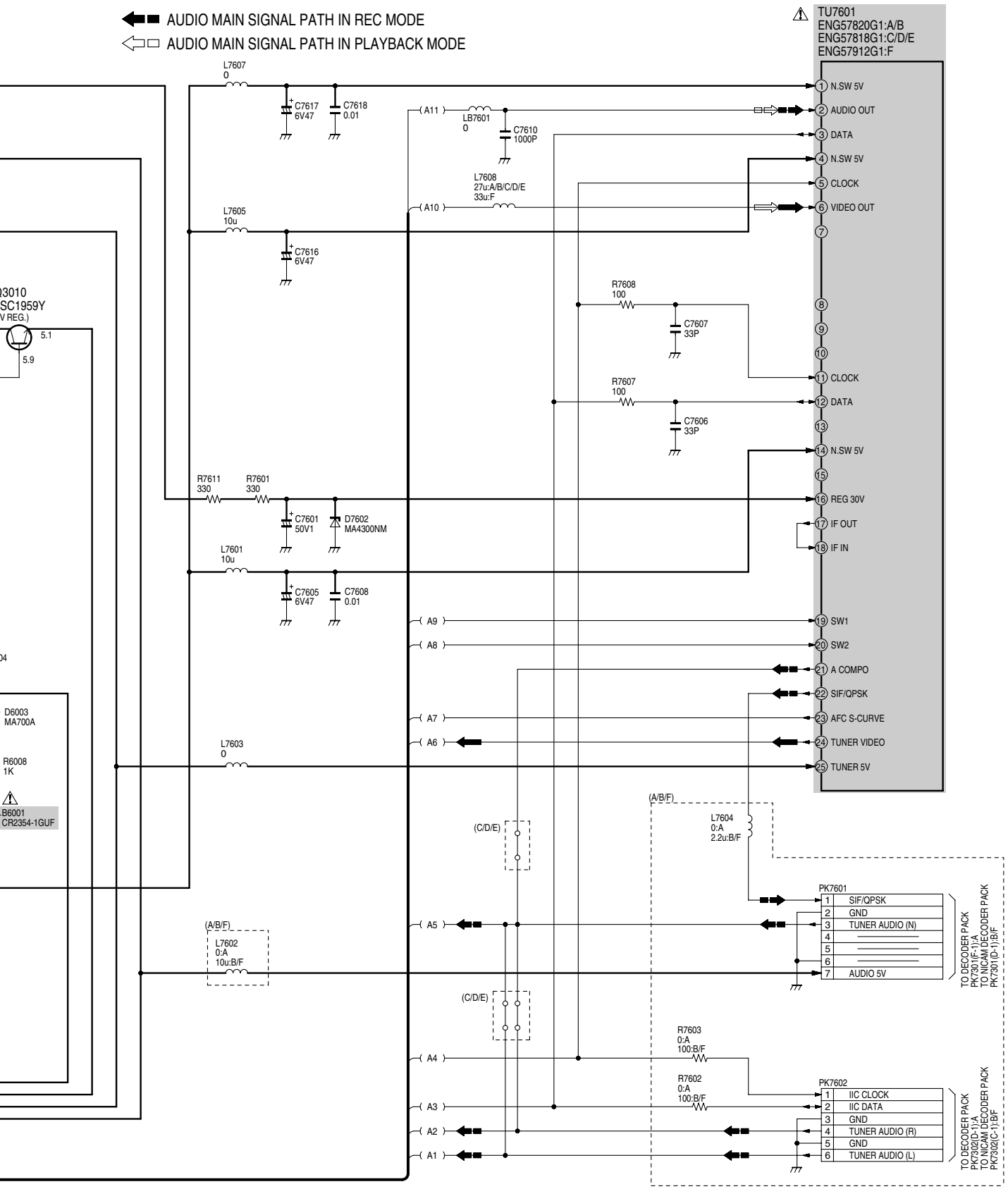
GE ON THIS DIAGRAM IS STOP MODE.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
POWER TRANSFORMER SECTION SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10

8.2. POWER SUPPLY/ RF SECTION IN MAIN SCHEMATIC DIAGRAM





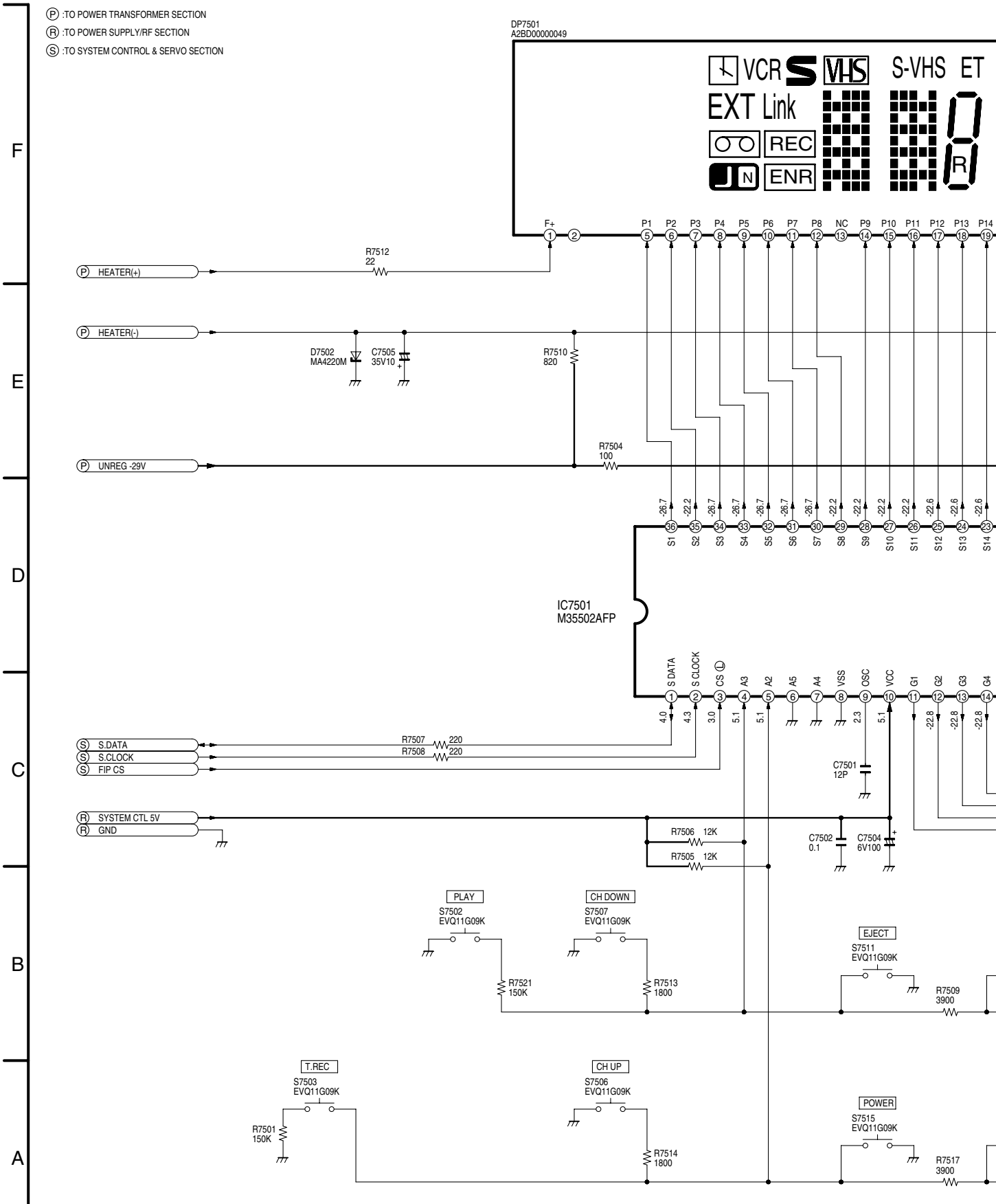
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

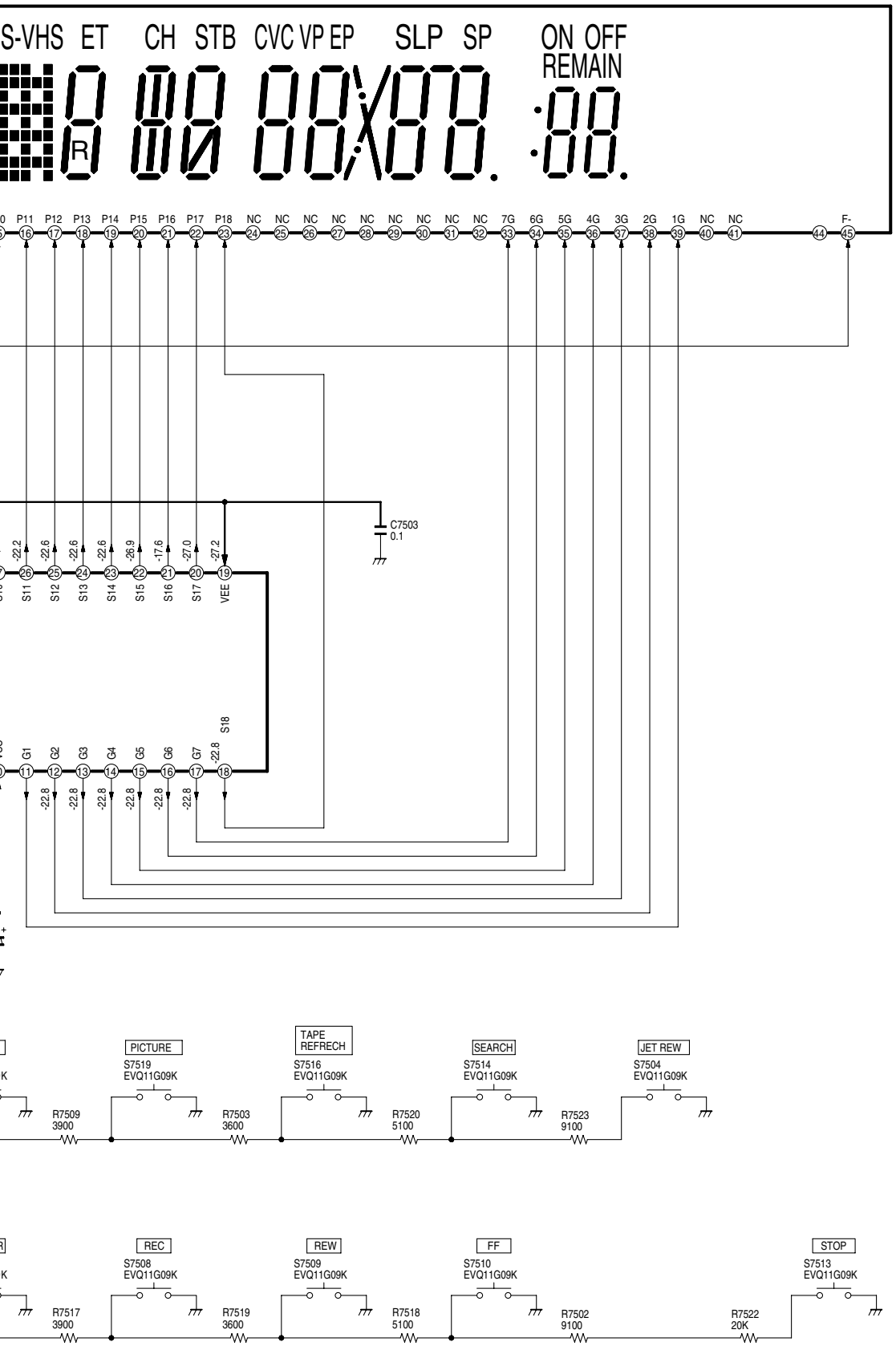
HIS DIAGRAM IS STOP MODE.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
POWER SUPPLY/RF SECTION
SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10

8.3. TIMER SECTION IN MAIN SCHEMATIC DIAGRAM



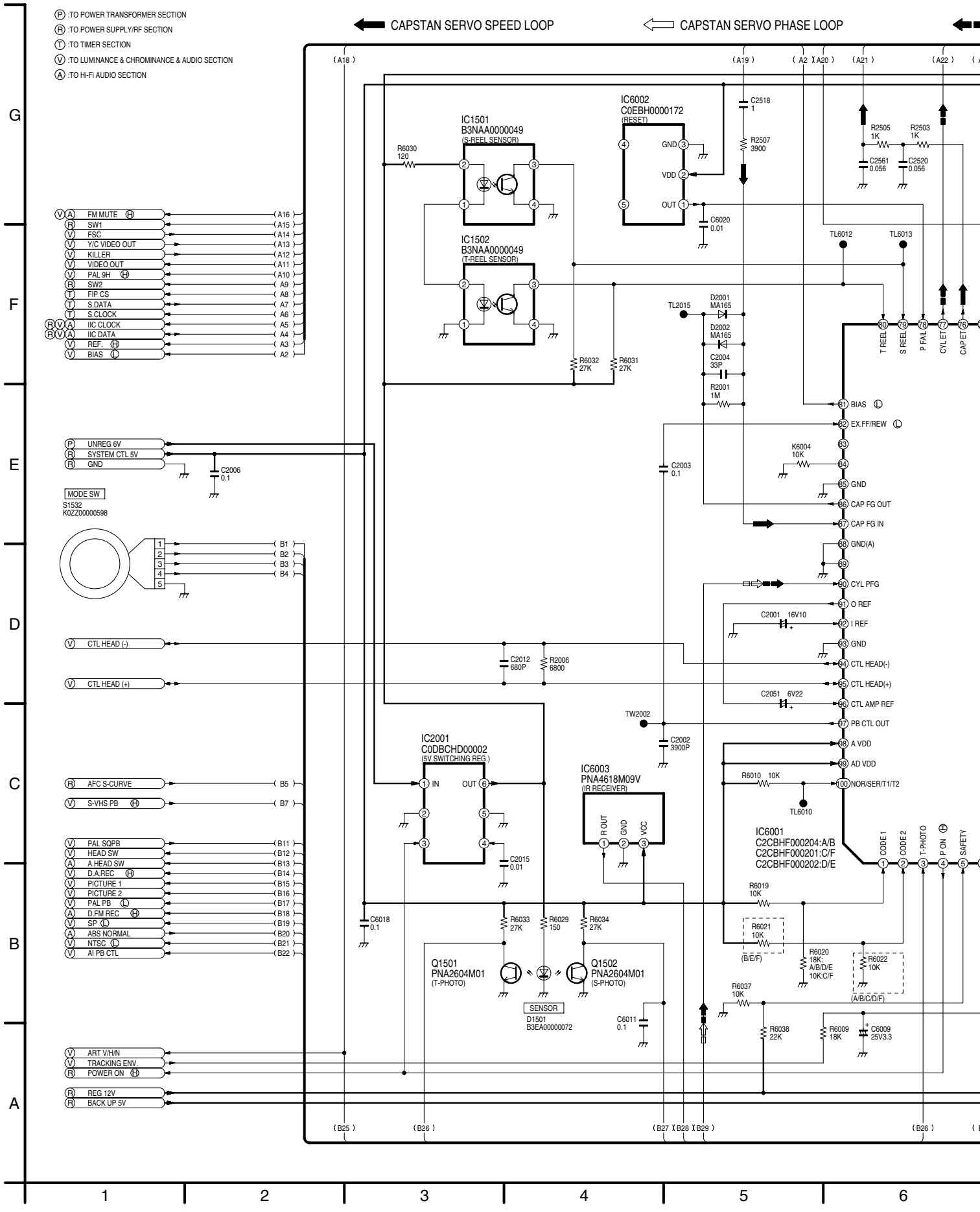


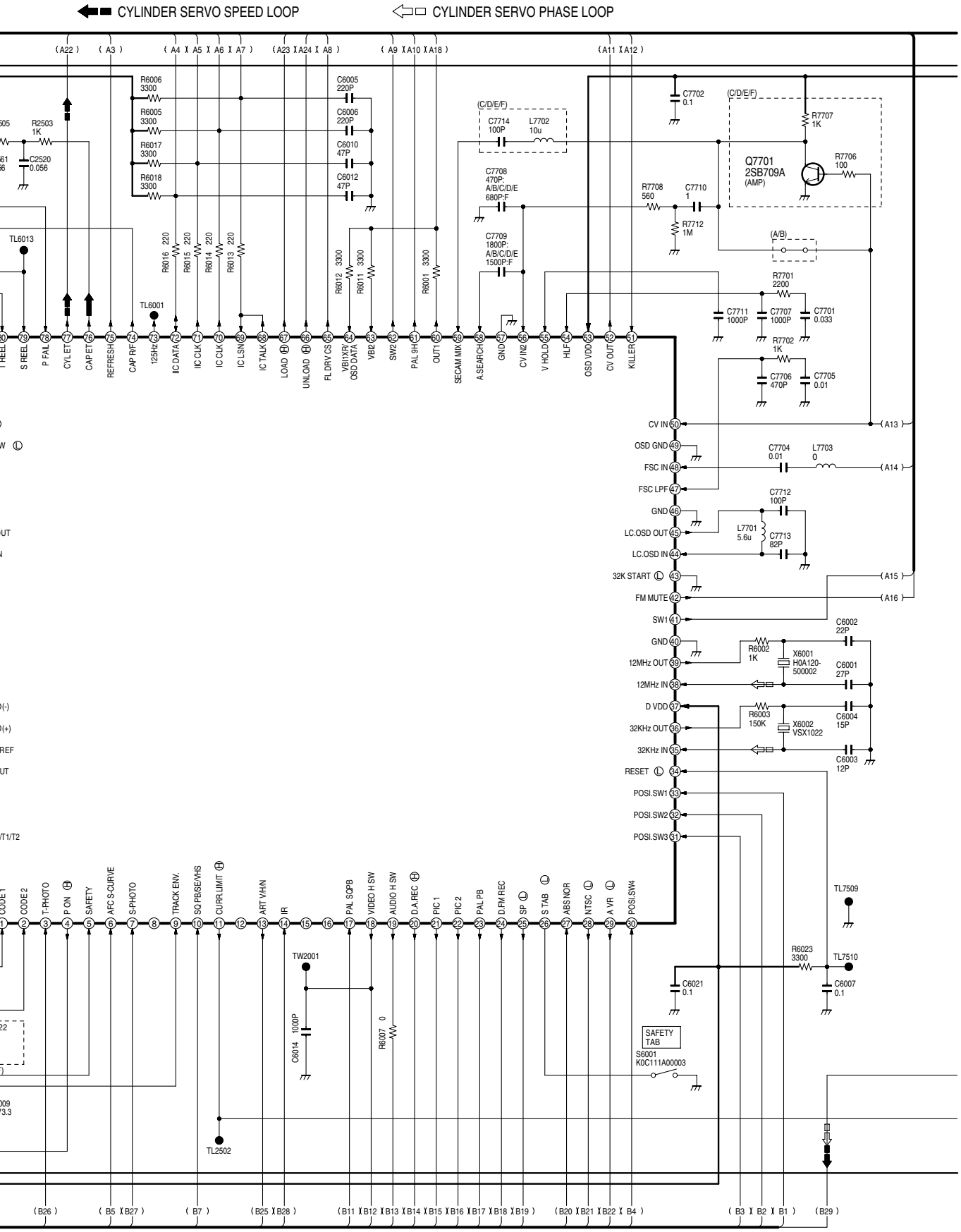
ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
HEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
TIMER SECTION SCHEMATIC DIAGRAM

5	6	7	8

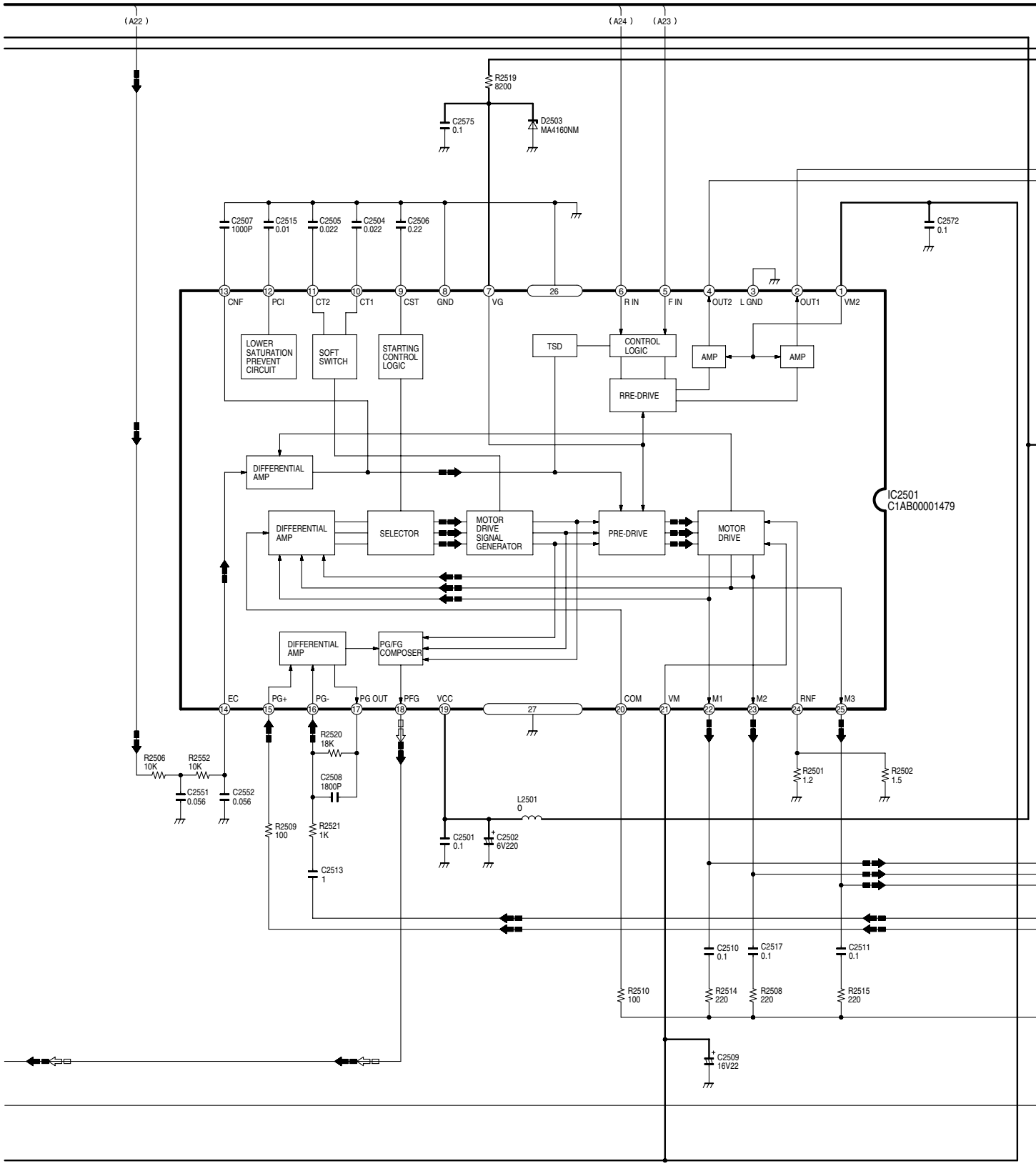
8.4. SYSTEM CONTROL & SERVO SECTION IN MAIN SCHEMATIC DIAGRAM



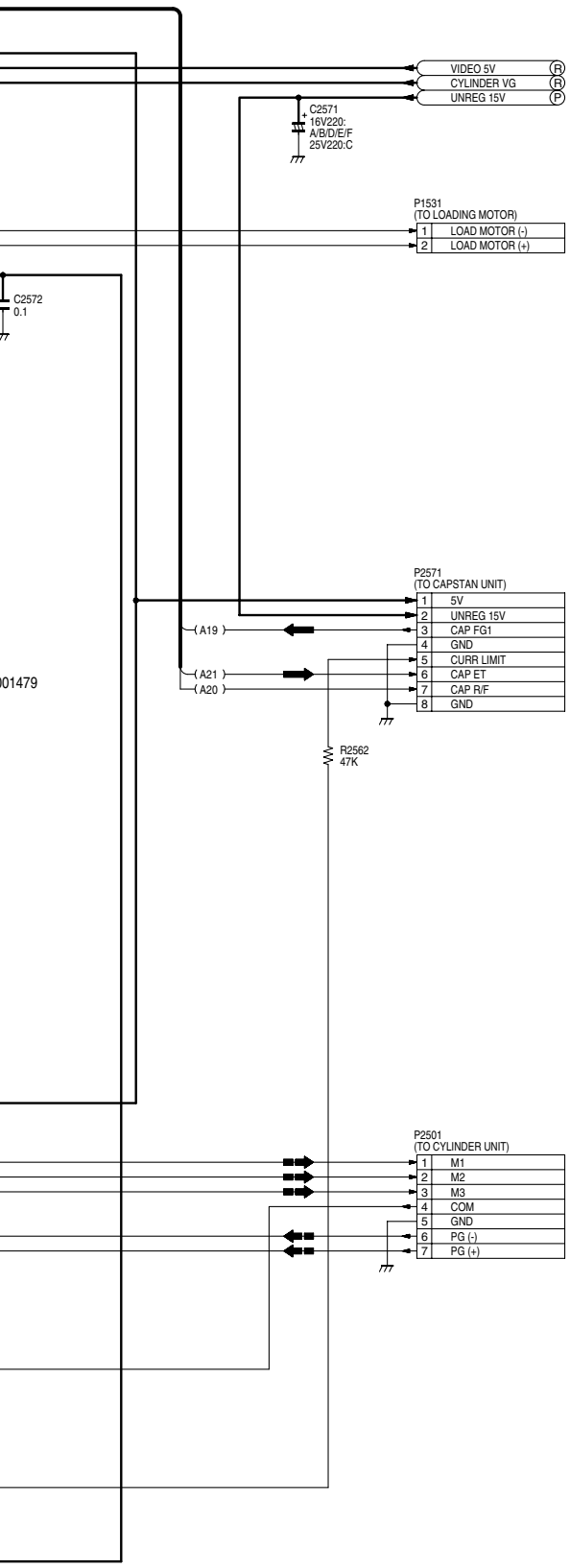


NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

6 | 7 | 8 | 9 | 10 | 11



NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO SECTION SCHEMATIC DIAGRAM

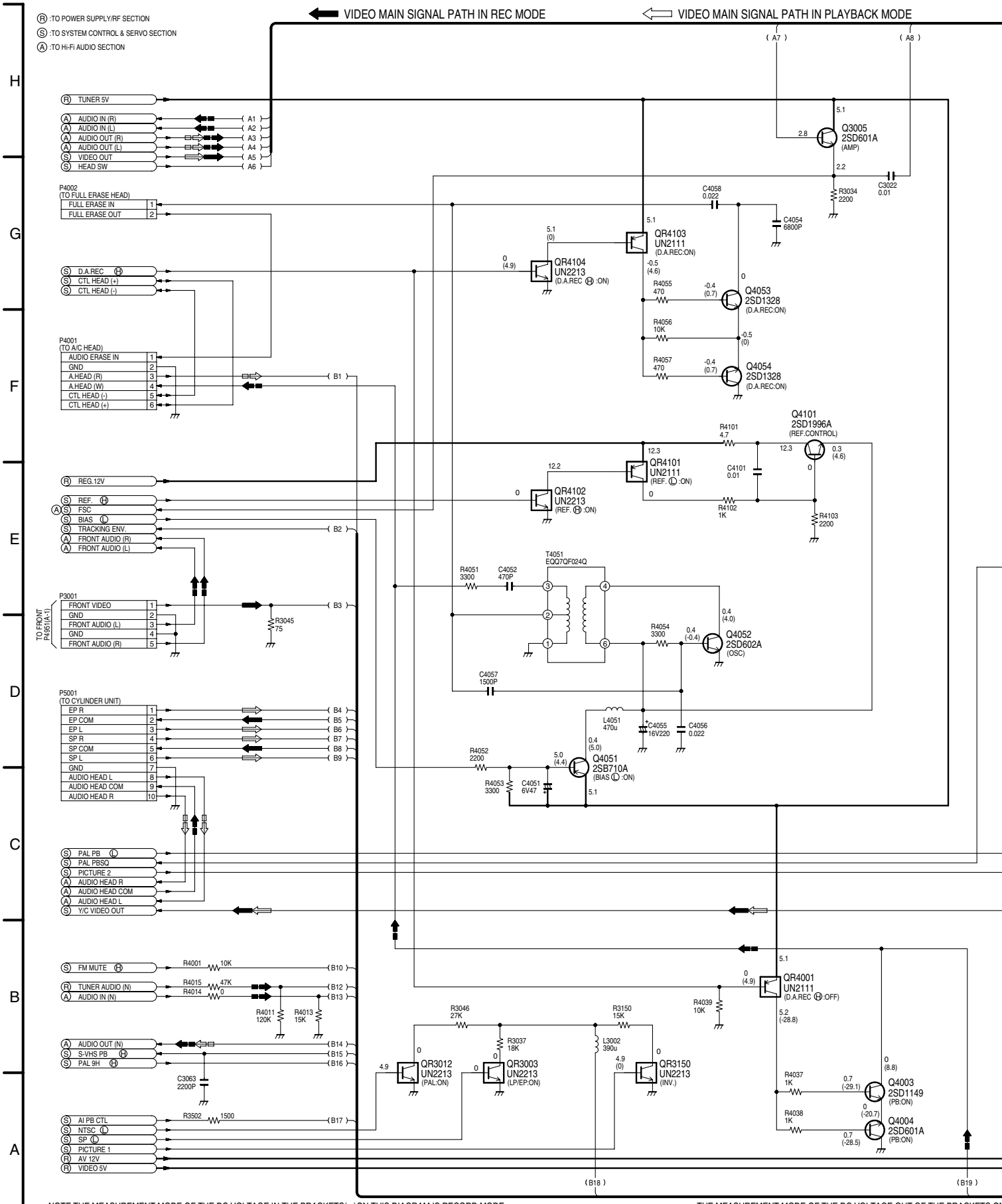


NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

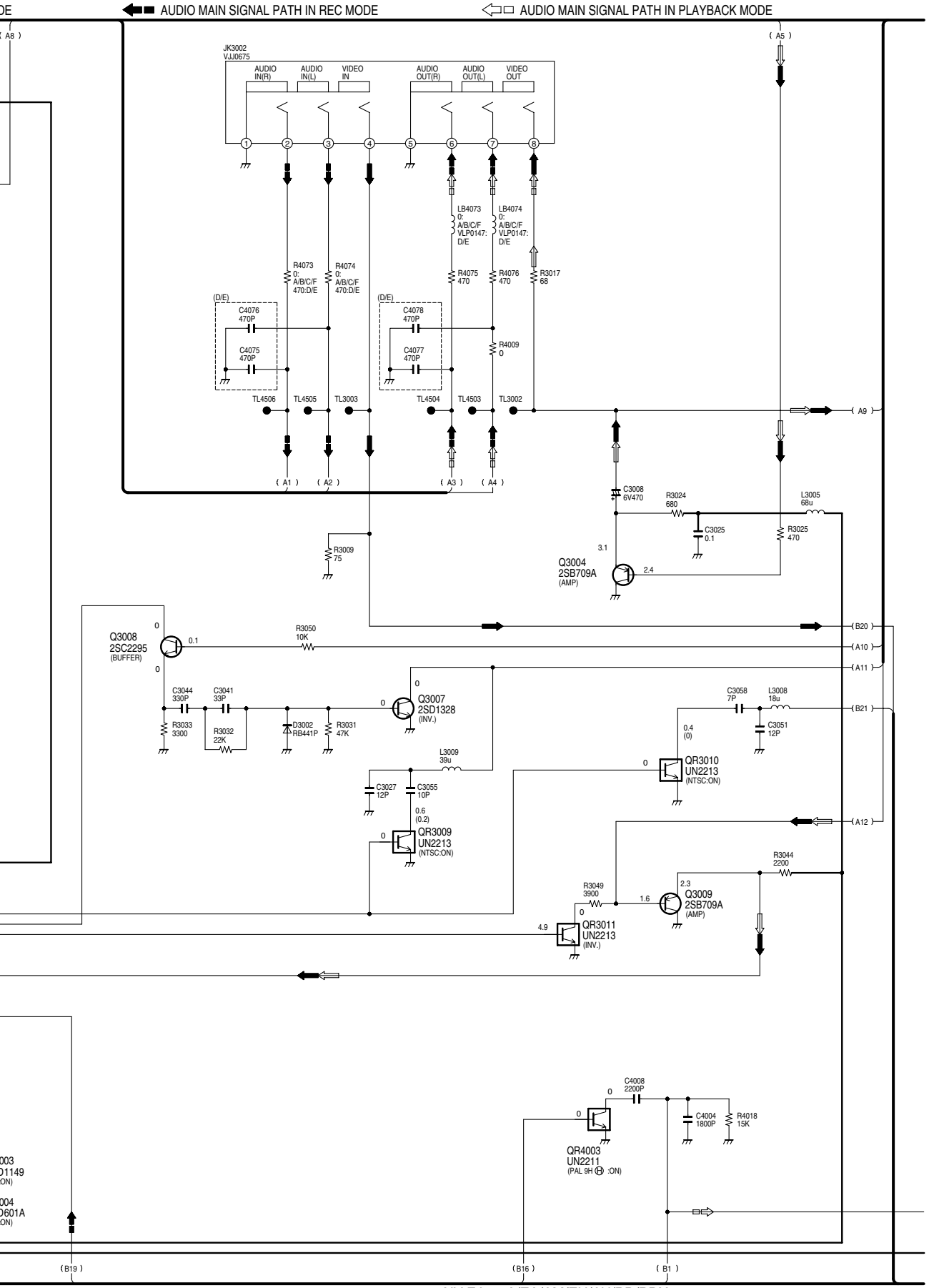
17	18	19

NV-FJ630A/EA/AM/EU/AU/BD/BDX
SYSTEM CONTROL & SERVO
SECTION SCHEMATIC DIAGRAM

8.5. LUMINANCE & CHROMINANCE/ AUDIO SECTION IN MAIN SCHEMATIC DIAGR



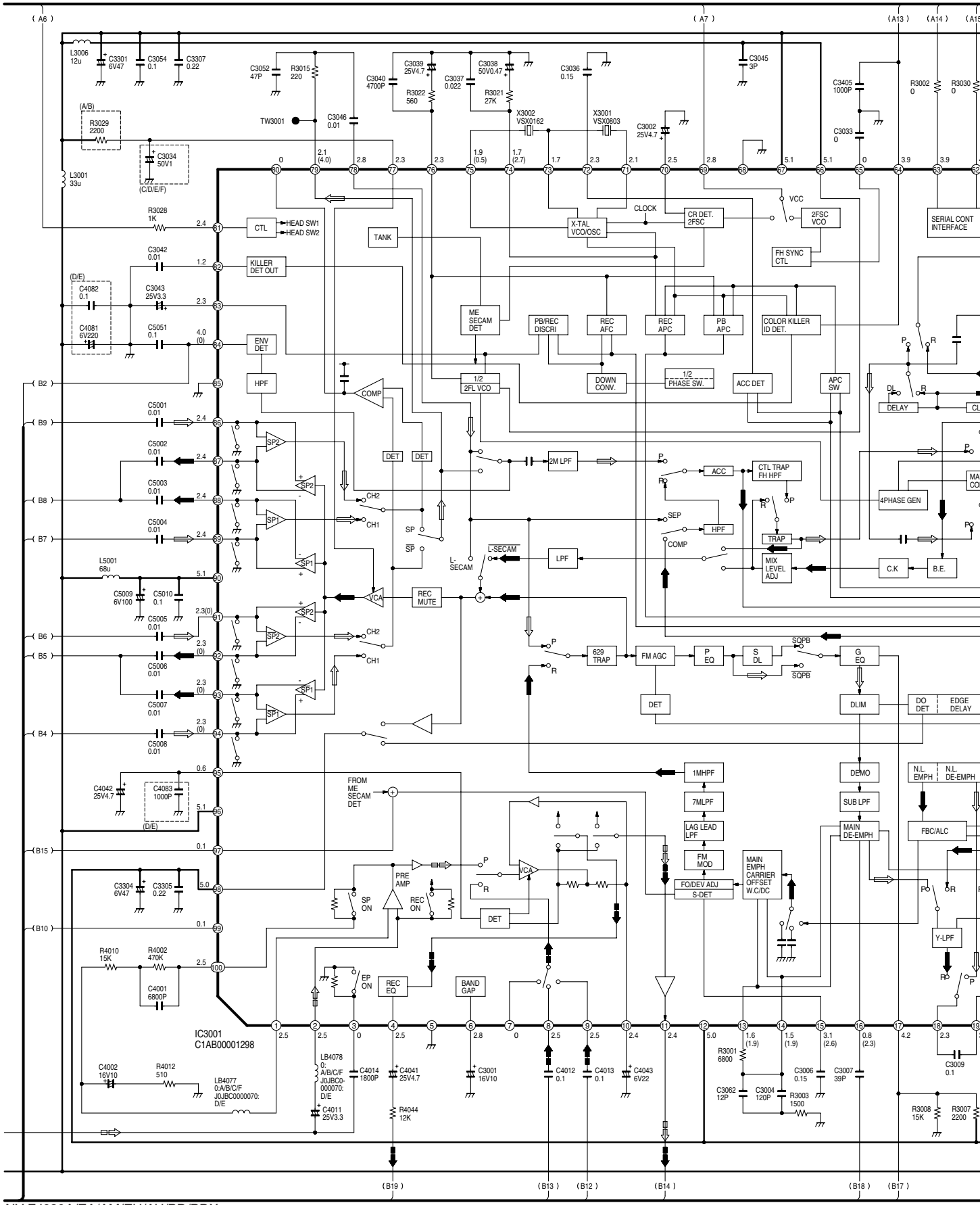
C DIAGRAM



UT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE

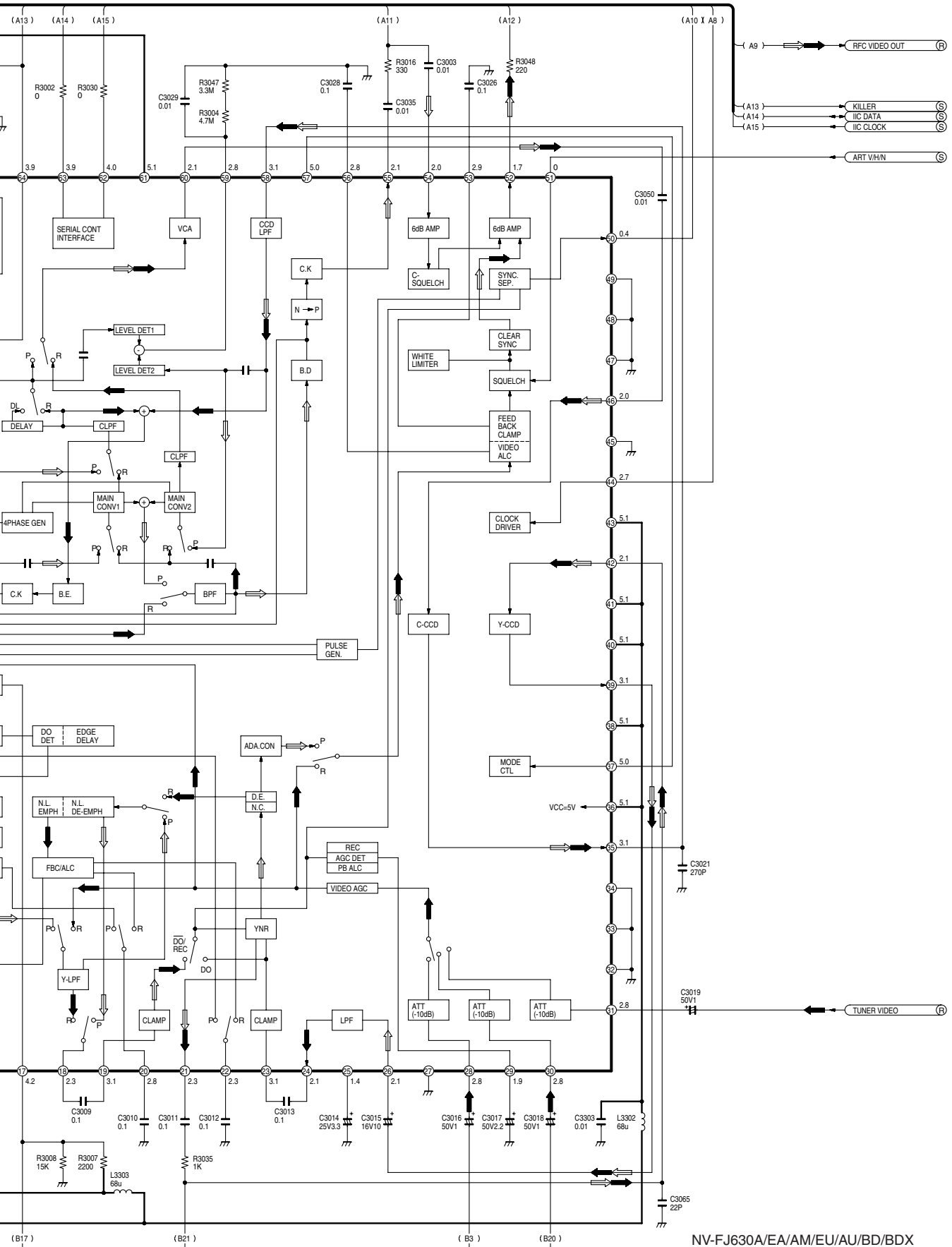
NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

7 8 9 10 11 12



NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE/AUDIO SECTION SCHEMATIC DIAGRAM

12 | 13 | 14 | 15 | 16 | 17 | 18

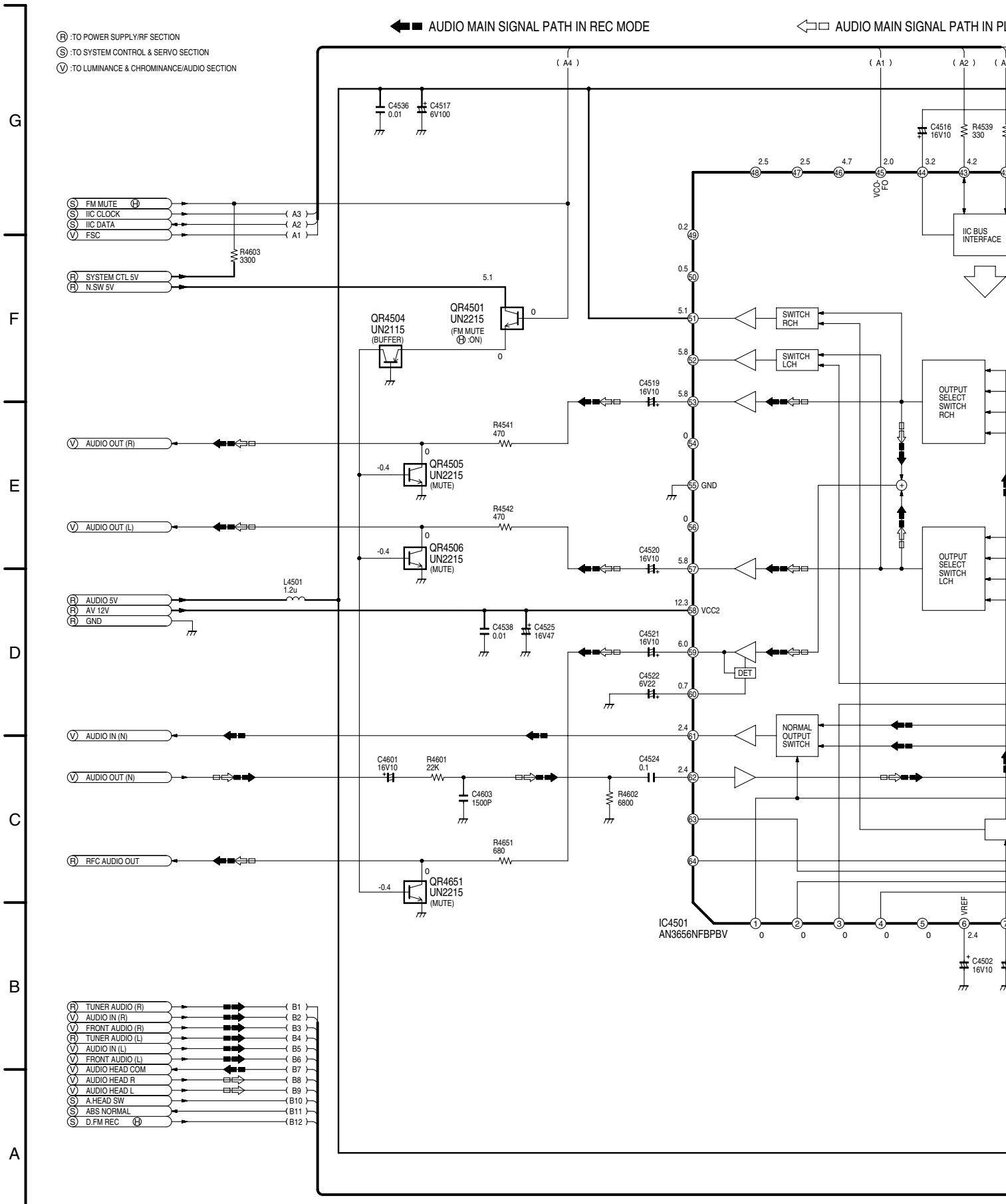


NV-FJ630A/EA/AM/EU/AU/BD/BDX
LUMINANCE & CHROMINANCE/AUDIO
SECTION SCHEMATIC DIAGRAM

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

18	19	20	21	22	23

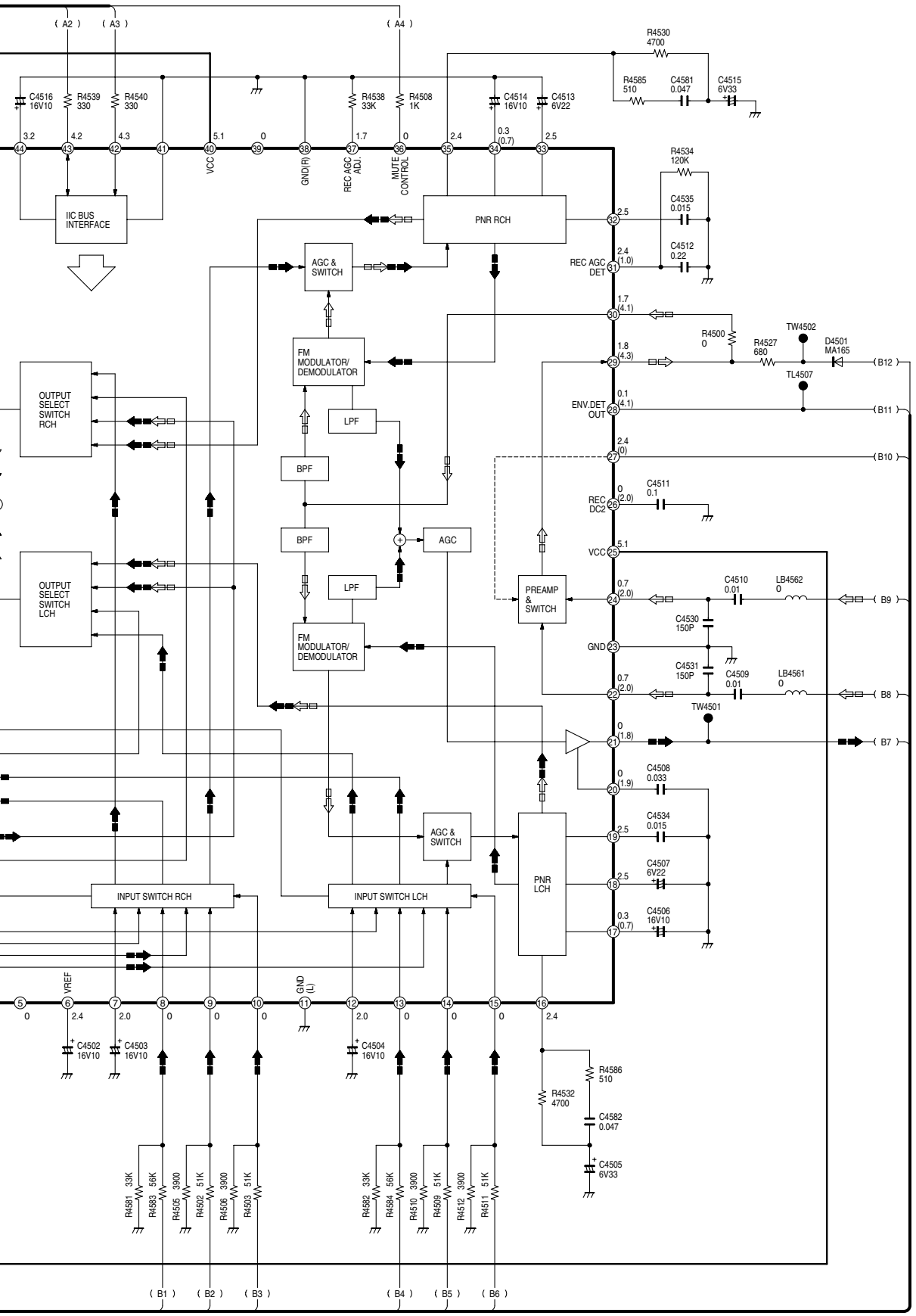
8.6. Hi-Fi AUDIO SECTION IN MAIN SCHEMATIC DIAGRAM



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( )ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR.(SP MODE)

THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYB WITH PAL COLOUR SIGNAL.(SP MODE)

SIGNAL PATH IN PLAYBACK MODE



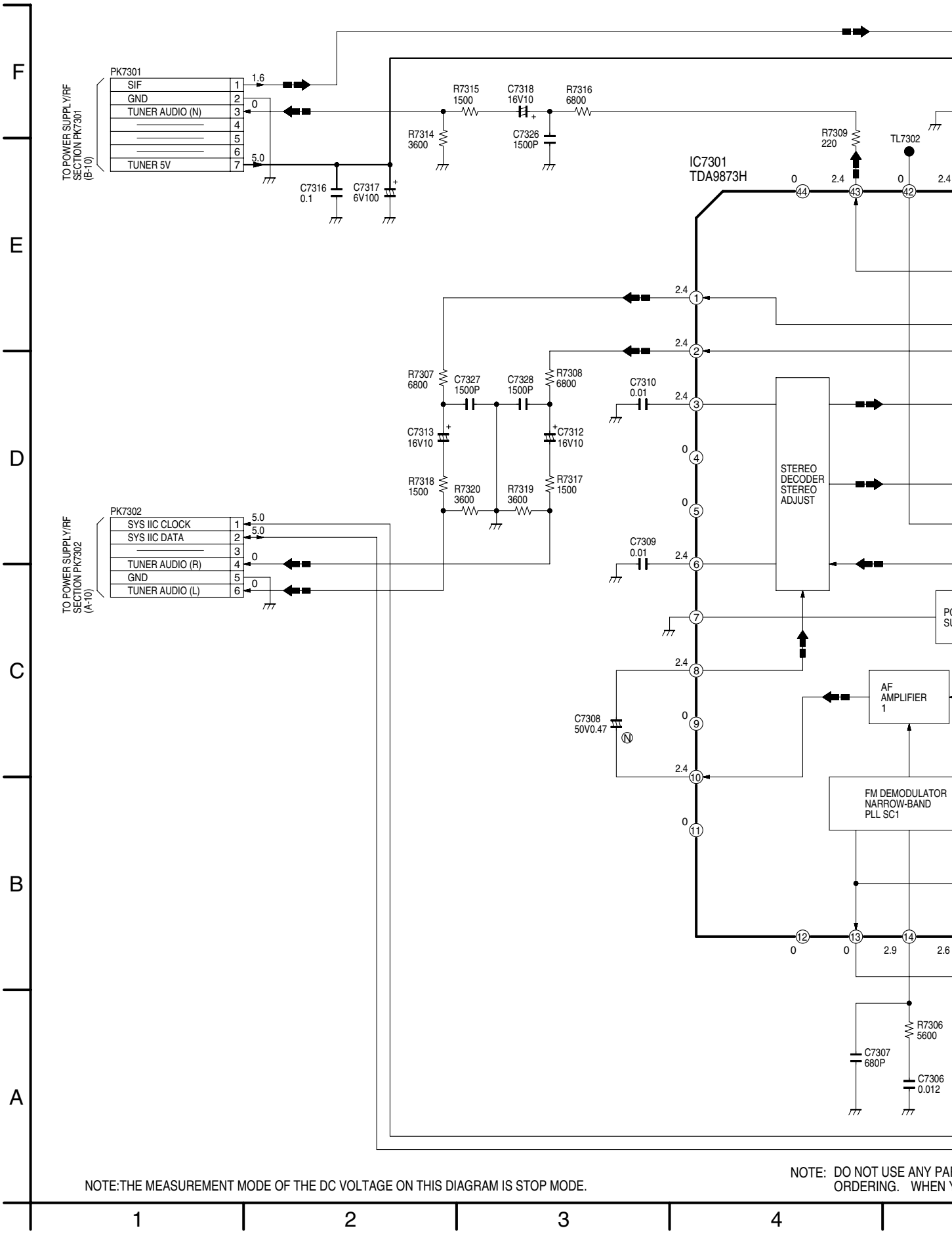
HIS DIAGRAM IS PLAYBACK MODE

NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A/EA/AM/EU/AU/BD/BDX
Hi-Fi AUDIO SECTION SCHEMATIC DIAGRAM

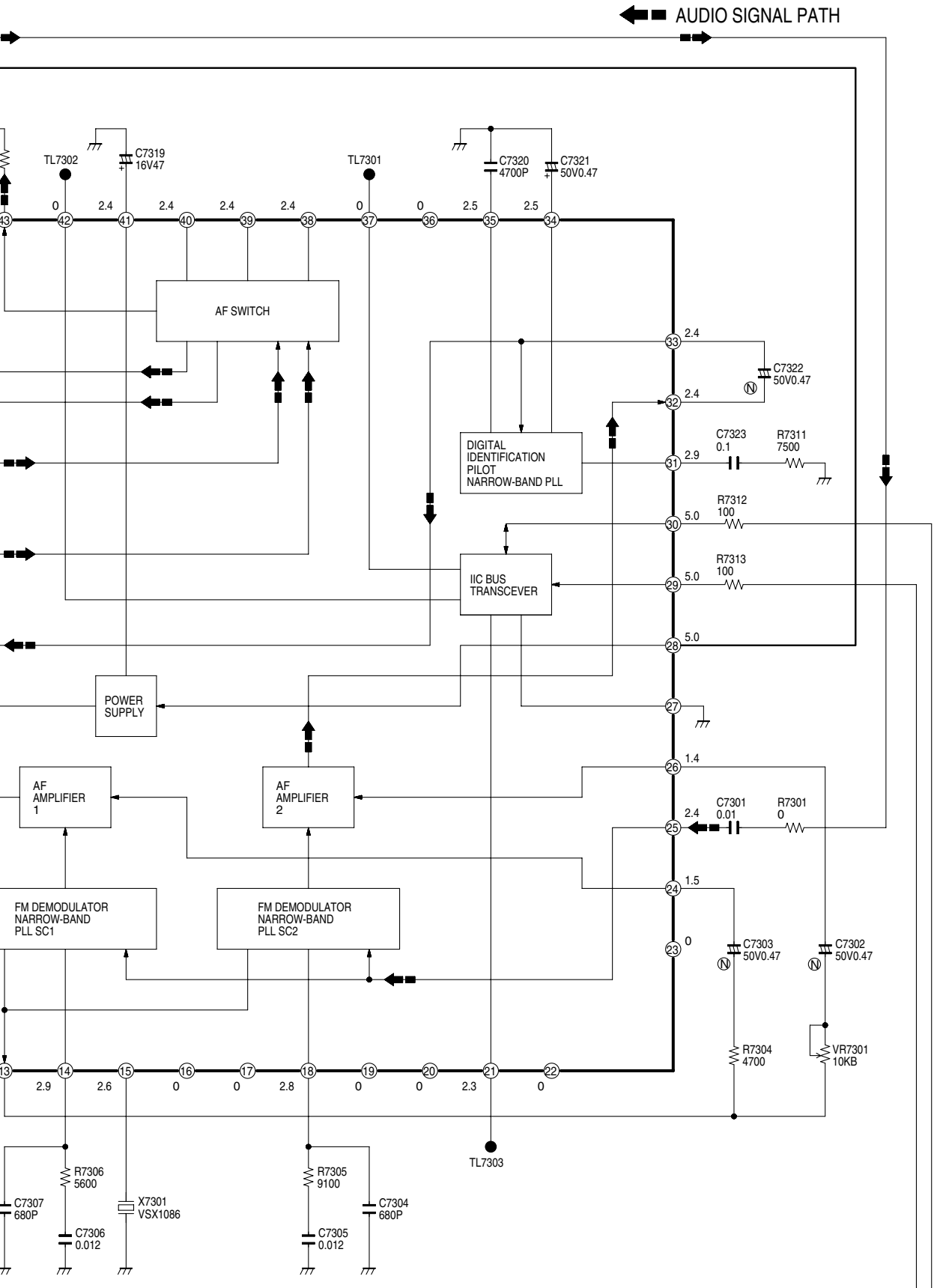
6 | 7 | 8 | 9 | 10

8.7. DECODER PACK SCHEMATIC DIAGRAM (NV-FJ630A)



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PA
ORDERING. WHEN

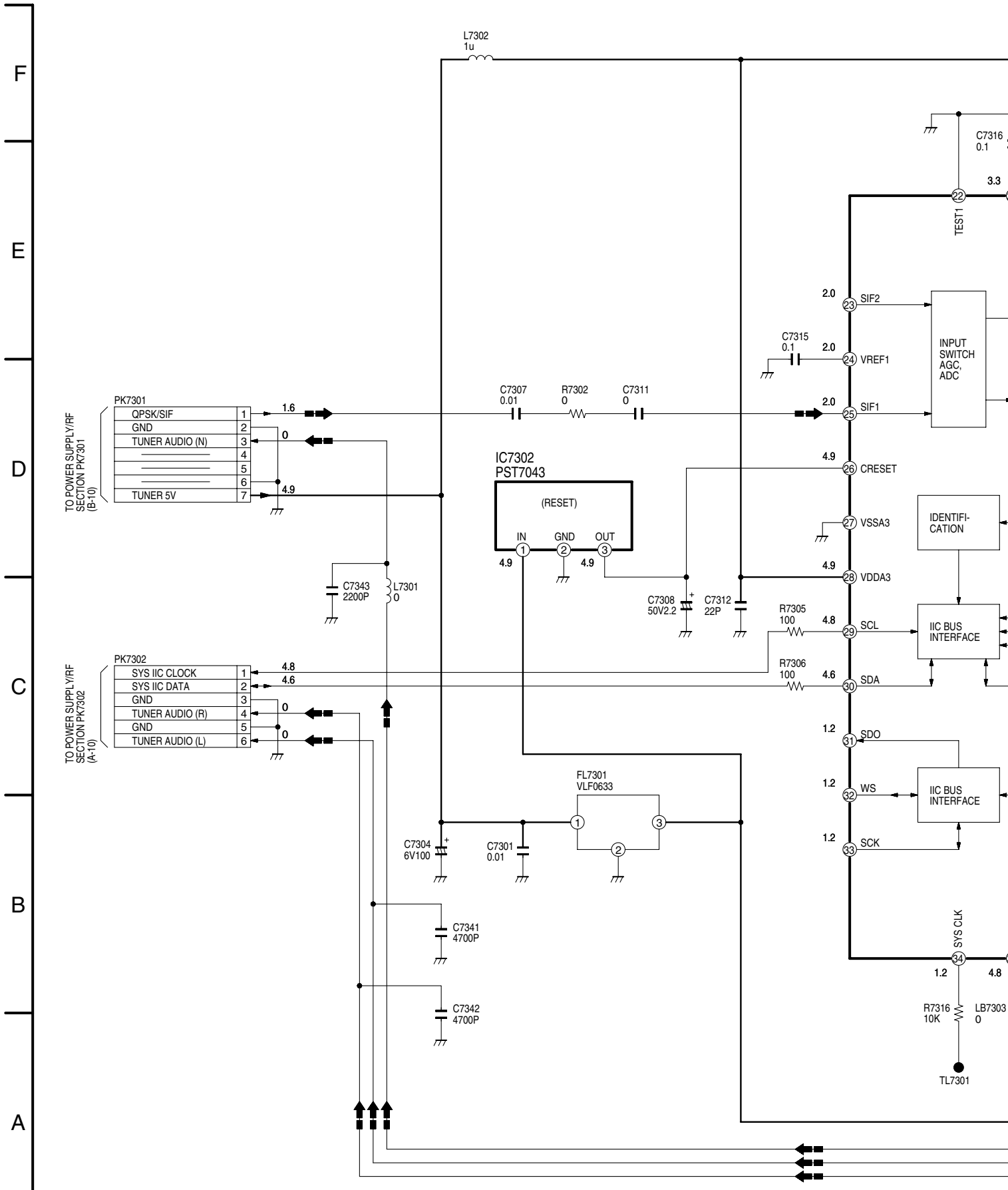


NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR DERING. WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.

NV-FJ630A
DECODER PACK SCHEMATIC DIAGRAM

5 | 6 | 7 | 8

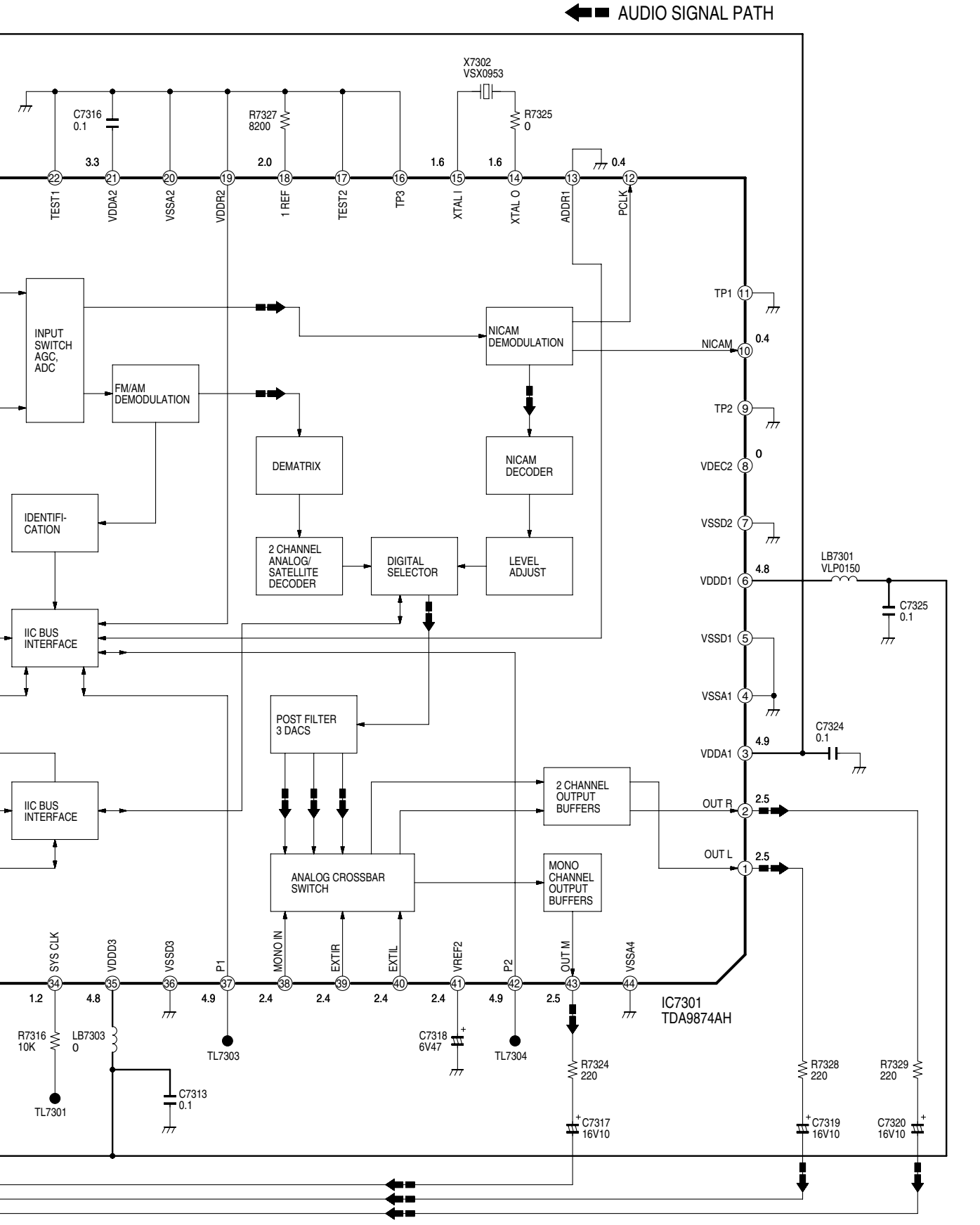
8.8. NICAM DECODER PACK SCHEMATIC DIAGRAM (NV-FJ630EA/BD/BDX)



NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS
ORDERING. WHEN YOU ORDER A PART,PLEASE

X)

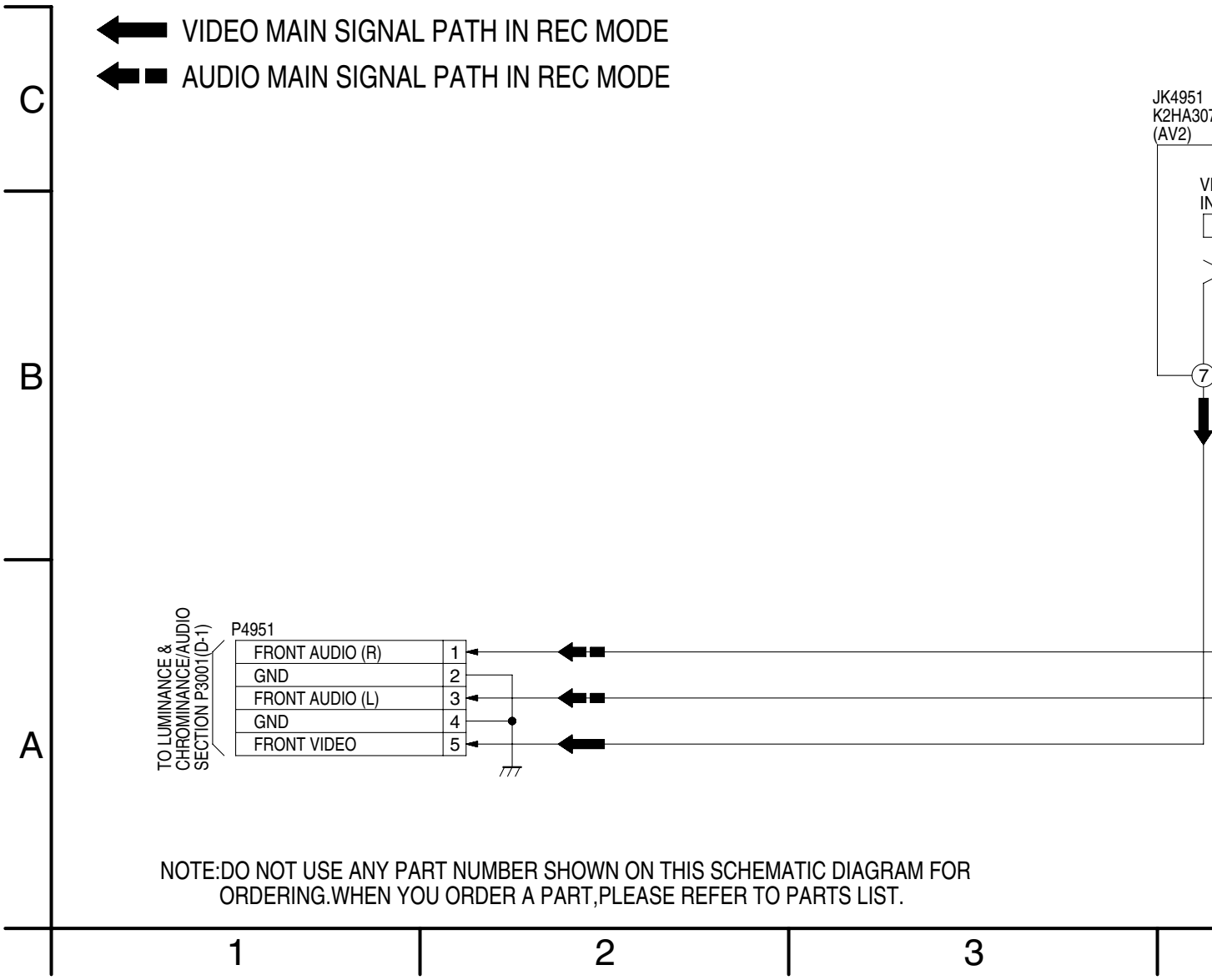


ER SHOWN ON THIS SCHEMATIC DIAGRAM FOR
ER A PART,PLEASE REFER TO PARTS LIST.

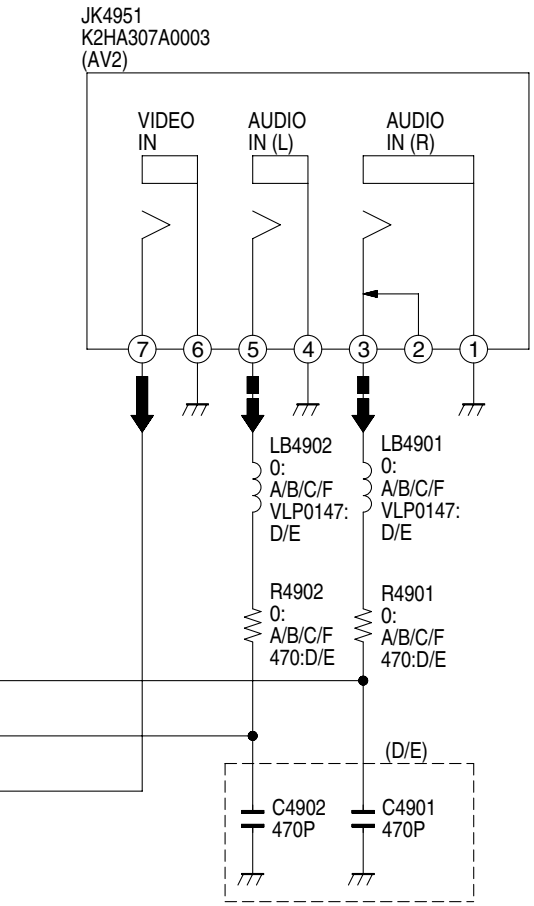
NV-FJ630EA/BD/BDX
NICAM DECODER PACK SCHEMATIC DIAGRAM

5 | 6 | 7 | 8

8.9. FRONT SCHEMATIC DIAGRAM



NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART,PLEASE REFER TO PARTS LIST.



NV-FJ630A/EA/AM/EU/AU/BD/BDX
FRONT SCHEMATIC DIAGRAM

4

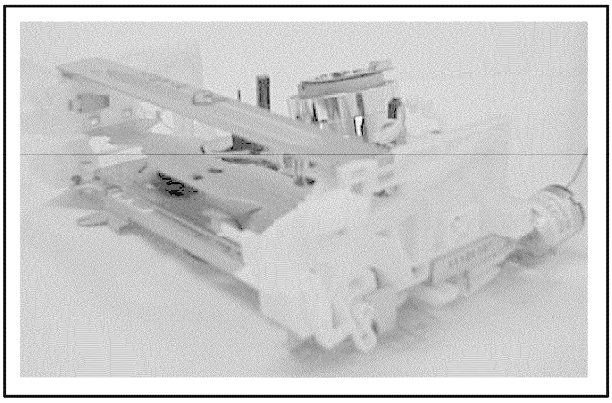
Order No.VRD0202010C8

Service Manual

Video Cassette Recorder

R4-MECHANISM-CHASSIS

Panasonic VHS



SPECIFICATIONS

INRTODUCTION

The R4-Mechanism chassis are built in several Panasonic VHS Video Cassette Recorders from year 2002.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

1.

CONTENTS

1.OUT LINE OF R4 MECHANISM..……3
1-1.DIFFERENCE BETWEEN Z-MECHANISM AND R4-MECHANISM..…… 3
1-2.THE TAPE TRANSPORT PATH...…..3
1-3.PARTS NAME OF R4 MECHANISM.……...4
1-4.NEW DD CYLINDER UNIT.…… 6
1-5.PG SHIFTER AUTOMATIC ADJUSTMENT.…… 7
2.REMOVAL OF CASSETTE TAPE.……..……..9
3.REMOVAL OF CASSETTE HOLDER UNIT & MECHANISM CHASSIS.……..…11
3-1.REMOVAL OF MECHANNISM CHASSIS UNIT.…….11
3-2.REMOVAL OF CASSETTE HOLDER UNIT..……..…11
4.DISASSEMBLY/ASSEMBLY METHOD FOR MECHANISM ……12
4-1.DISASSEMBLY OF MECHANISM.……...12
4-2.ASSEMBLY AND PHASE ADJUSTMENT OF MECHANISM..……16
5.MECHANICAL ADJUSTMENT PROCEDURE.……...…...25
5-1.P2 AND P3 POST ADJUSTMENT (PREADJUSTMENT)……..……..……..……25
5-2.TAPE INTERCHANGEABILITY ADJUSTMENT..……...25
Servicing Fixture and Tools……..……30
6.SERVICE INFORMATION DISPLAY ……..……..…..31
7.SELF – DIAGNOSIS INDICATION DISPLAY ……..……..……33
7-1. TABLE OF DETECTING CONDITION AND MOVEMENT OF MECHANISM IN DETECTION OF THE SELF-DIAGNOSIS FUNCTION.……..…35
7-2. MEMORY OF THE SELF-DIAGNOSIS HISTORY AND THE SUPPLEMENTARY DATA……...39
7-3.CHANGE OF MEMORY TIMINGFOR ERROR NO. F03 AND F04..……..……..……41
7-4.ANALIZING PROCEDURE FOR MECHANISM ERROR.……..……41
8.TEST MODE.……..…..44
9.TIMING CHART OF MODE SW.……..…44
10.SYSTEM CONTROL CIRCUIT ……...45
10-1. MODE TRANSITION..……45
10-2. BASIC ACTION IN MECHANISM.……..…46
10-3. SUPPLY AND TAKE-UP SENSORS……..……47
10-4. SAFETY TAB SWITCH……48
10-5. DEW SENSOR……..48
10-6. SAFETY TIMER..……..48
11.MOTOR DRIVE SECCTION..……51
11-1. CAPSTAN DRIVE CIRCUIT.……..51
11-2. CYLINDER DRIVE AND LOADING MOTOR DRIVE CIRCUIT.……..…53

1. OUTLINE OF R4 MECHANISM

1-1.DIFFERENCE BETWEEN Z-MECHANISM AND R4-MECHANISM

Item	Z-Mechanism	R4-Mechanism
Frame	The sheet metal frame	The sheet metal frame. The mechanism Spacer (R) & (L) for mechanism mounting are added.
Rear Panel	ABS plastic	Sheet metal
Front Panel Unit	Standard	Removal of the front panel becomes easy because of decreasing the hooking portions.
Pieces of the Components	175 pieces	125 pieces
DD Cylinder	Corresponding heads: 2 ~ 6ch Weight: 100%	Corresponding heads: 2 ~ 10ch Weight: 76%
FF/REW speed	360 times	600 / 400 times
Area size of mechanism	100%	97%
Capstan drive IC, Cylinder drive IC, Loading motor drive IC	Standard	All new ICs
Capstan Unit	Whole wave/Half wave Drive	PWM Drive
Cylinder Unit	New GLDD or UDD	RDD
Tape transport path	Standard	same as Z mechanism
Phase adjustment place	7 places	5 places
Slot in unit	Slide rack drive	Sector gear drive

1-2.THE TAPE TRANSPORT PATH

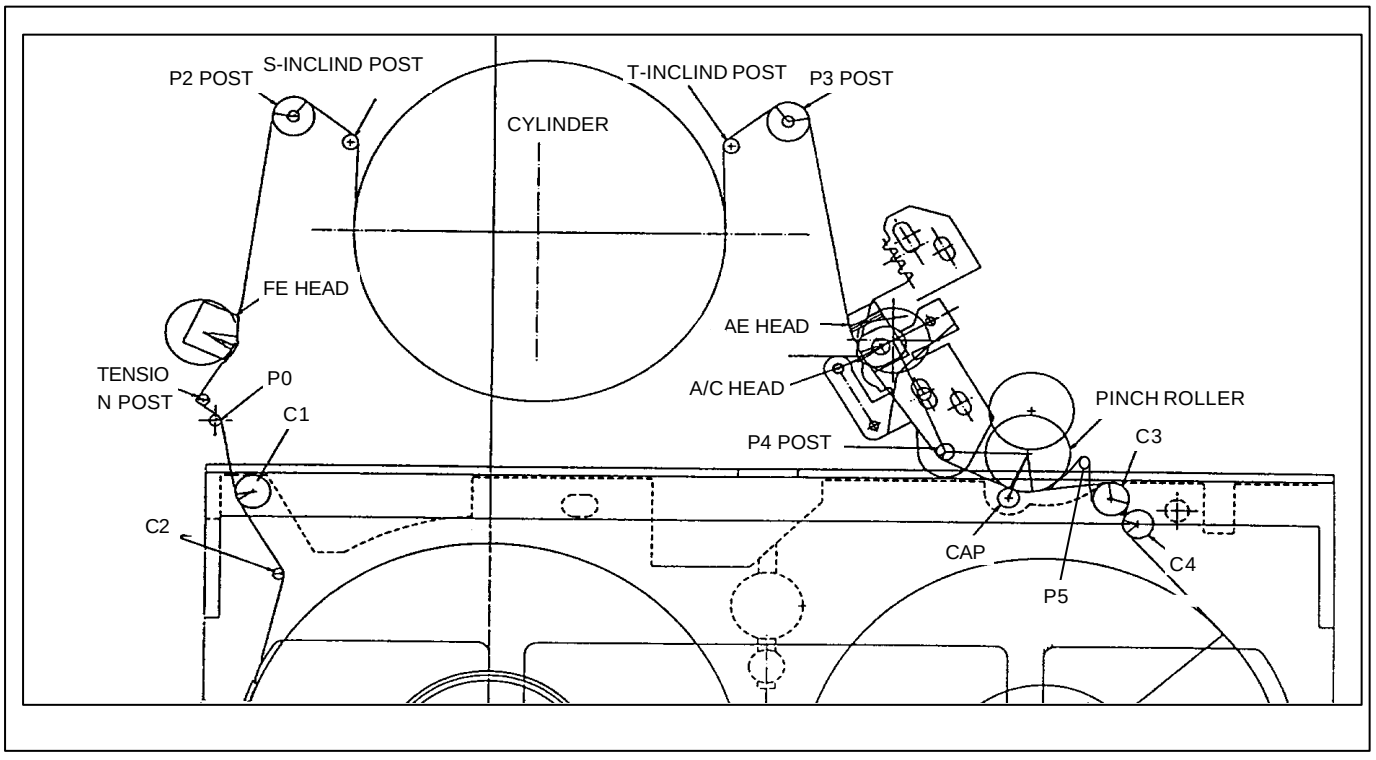


Fig.M1

1-3.PARTS NAME OF R4-MECHANISM

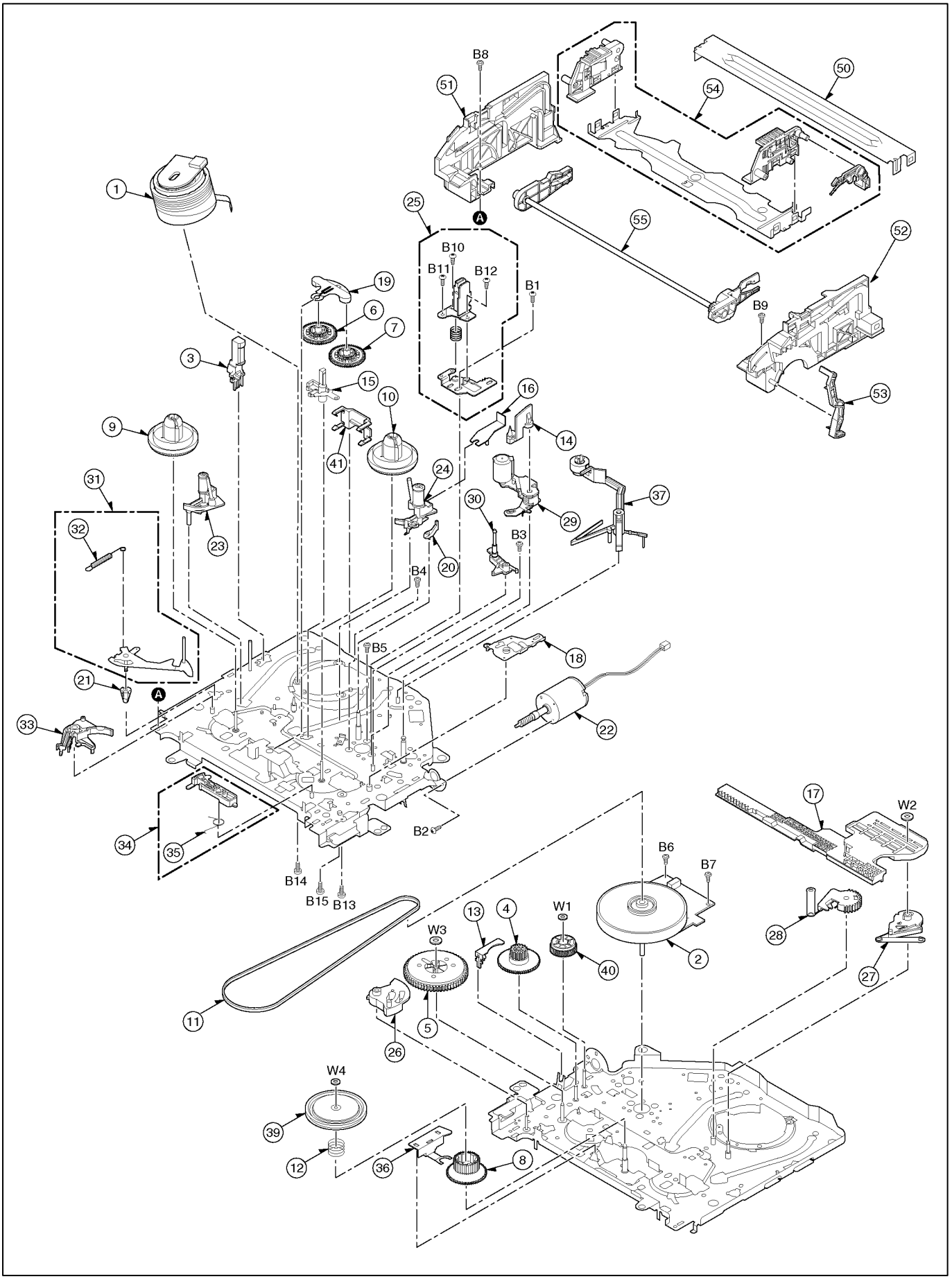


Fig.M2

Ref. No.	Part Name
1	CYLINDER UNIT
2	CAPSTAN UNIT
3	FE HEAD
4	INTERMEDIATE GEAR
5	MAIN CAM GEAR
6	IDLER GEAR
7	IDLER GEAR
8	CHANGE GEAR
9	REEL TABLE
10	REEL TABLE
11	CAPSTAN BELT
12	CHANGE GEAR SPRING
13	WORM SHAFT HOLDER
14	OPENER PIECE
15	LED PRISM
16	TAPE GUIDE
17	MAIN LEVER
18	PINCH CHARGE ARM
19	IDLER ARM
20	P4 CAP
21	TENSION ARM BOSH
22	LOADING MOTOR UNIT
23	SUPPLY SHAFT HOLDER UNIT
24	TAKE UP SHAFT HOLDER UNIT
25	AC HEAD UNIT
26	SECTOR GEAR UNIT
27	SUPPLY LOADING ARM UNIT
28	TAKE UP LOADING ARM UNIT
29	PINCH ARM UNIT
30	P5 ARM UNIT
31	TENSION ARM UNIT
32	TENSION SPRING
33	SUPPLY BRAKE ARM UNIT
34	TAKE UP BRAKE ARM UNIT
35	TAKE UP BRAKE SPRING
36	CHANGE LEVER UNIT
37	CLEANER ARM UNIT
39	CENTRE CLUTCH UNIT
40	TORQUE CLUTCH UNIT
41	FLAT CABLE HOLDER
50	TOP PLATE
51	SIDE PLATE (L)
52	SIDE PLATE ® UNIT
53	OPENER LEVER
54	CASSETTE HOLDER UNIT
55	MAIN SHAFT UNIT

Ref. No.	Part Name
B1	SCREW
B2	SCREW
B3	SCREW
B4	SCREW
B5	SCREW
B6	SCREW
B7	SCREW
B8	SCREW
B9	SCREW
B10	SCREW
B11	SCREW
B12	SCREW
B13	SCREW
B14	SCREW
B15	SCREW
W1	WASHER
W2	WASHER
W3	WASHER
W4	WASHER

1-4. NEW DD CYLINDER UNIT

Three phases sensor-less RDD system instead of Matsushita original GLDD/UDD system is adopted for standardization.

> ● **NOTE:**
> **Replacing only Upper Cylinder unit of RDD cannot be performed, as securing of RT gap is impossible in a place other than factory, replace the cylinder as a whole RDD Cylinder Unit. The PG Shifter Adjustment shown in item 1-3 should be performed after replacement of the DD Cylinder.**

FEATURE

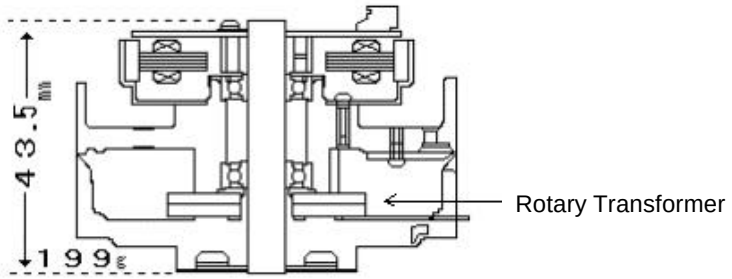
1. The RDD corresponds to 2 ~ 10 Heads.
2. Thickness of Upper Cylinder and Lower Cylinder becomes thin.
3. Adoption of standard parts in the VTR world.
4. Miniaturization of the Rotary Transformer.

	Rotary Transformer of UDD	Rotary Transformer of RDD
Inner Diameter	ϕ18.5	ϕ8.3
Outer Diameter	ϕ47.6	ϕ32.3
Thinness	t=2.70	t=1.85
Total Parts Pieces of the Motor	62	56

(*Rotary Transformer which is corresponding to 6 Heads)

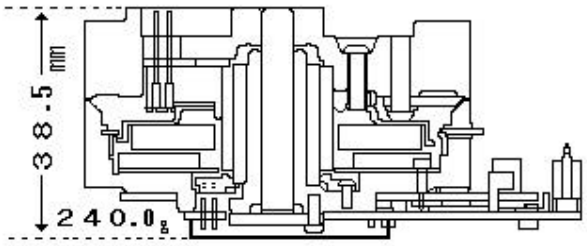
RDD

Drive System: 3 Phases Full Wave Sensor-less



NEW GLDD

Drive System: 3Phase Half Wave P Signal-less



UDD

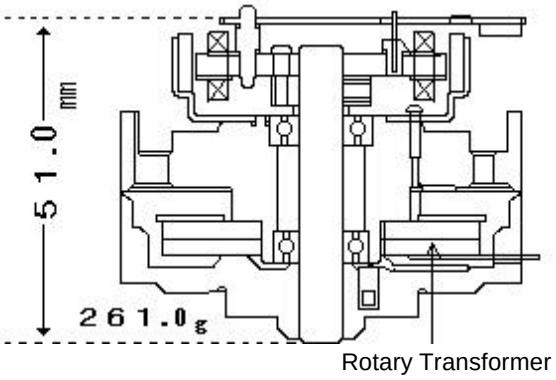


Fig.M3

1-5. PG SHIFTER AUTOMATIC ADJUSTMENT

The PG Shifter Adjustment is performed automatically on this VCR.
The PG Shifter Adjustment should be performed after replacement of the DD Cylinder, System Control Microprocessor and Main C.B.A.

1-5-(1). ADJUSTMENT PROCEDURE

PROCEDURE	F.I.P. DISPLAY
Turn on the Service Mode 1.Press the FF key and the EJECT key simultaneously for more than 3 seconds.	0 00 00
Activate the Service Mode 2 2.While keep pressing FF key, press the EJECT key in twice.	2 00 00
Activate the Entering Mode. 3.Press the EJECT key for more than 3 seconds.	2 00
Set the Mode 2. 4.Press the CH UP key once.	2 1 00
Insert the alignment cassette tape (VFJ8125H3F:PAL/SECAM) **(VFM8080HQFP: NTSC)** 5.The PG Shifter Adjustment starts automatically.	2 1 00
When the sequence of the automatic adjustment has been terminated, the following action has been made. ● **SUCCEED: The cassette tape is ejected.** ● **ERROR: The "F20", "F21", "F22" or "F23" is displayed. Refer to next PG Shifter Adjustment Self-Diagnosis Indication Table regarding the details of the indications.**	
Exit from Service Mode. 6. Press FF and EJECT keys simultaneously in 6 times. Then the FIP becomes normal indication.	10 : 00 (Normal Indication)

PG SHIFTER AUTOMATIC ADJUSTMENT SELF-DIAGNOSIS INDICATION

F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

NOTE:
After replacing the DD Cylinder, the Tape Interchangeability adjustment (X-Value Adjustment, P2 and P3 Posts Adjustment) shown below should be performed after the PG Shifter Automatic Adjustment.

1-5-2. X-VALUE and LINEARITY (P2 and P3 Posts) ADJUSTMENT

1. Set the Auto Tracking to off.
   (1) Press the FF key and the EJECT key simultaneously for more than 3 seconds.
   (2) While keep pressing FF key, press the EJECT key in twice.
2. Perform the X-VALUE ADJUSTMENT
   (1) Turn the Auto-Tracking to off and set the tracking to center fixing position.
   (2) Playback the alignment Tape and adjust the X-Value so that the envelope becomes maximum as described on item 5-2. Tape Interchangeability Adjustment in Section 5.MECHANICAL ADJUSTMENT PROCEDURE.

Alignment Tape	VFJ8125H3F (PAL)
	VFM8080HQFP (NTSC)
Test Point of Playback Envelope	TW3001

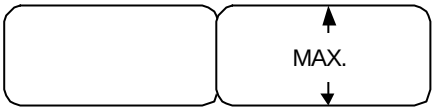


Fig.M4

3. Perform the LINEARITY ADJUSTMENT
   (1) Turn the Auto-Tracking to off and set the tracking to center fixing position.
   (2) Playback the alignment Tape and adjust the LINEARITY so that the envelope becomes flat by tracking (+) and (-) switches.

Alignment Tape	VFJ8125H3F (PAL)
	VFM8080HQFP (NTSC)
Test Point of Playback Envelope	TW3001

Fig.M5

- Main symptoms and Adjustment point

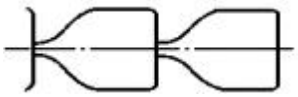
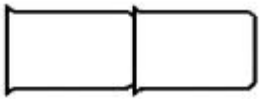
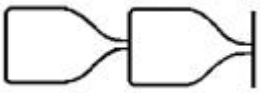
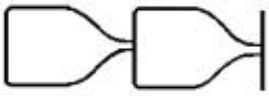
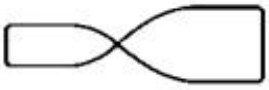
Envelope	Post Name		Adjustment Method
	P2 Post		Turn P2 Post counter-clockwise (Approx. 1/2 revolution)
	P2 Post		Turn P2 Post clockwise (Approx. 1/4 revolution)
	P3 Post		Turn P3 Post clockwise (Approx. 1/2 revolution)
	P3 Post		Turn P3 Post counter-clockwise (Approx. 1/4 revolution)
	P2 Post	P3 Post	Turn P2 Post clockwise (Less than 1 revolution) Turn P3 Post counter-clockwise (Less than 1revolution)

Fig.M6

2. REMOVAL OF CASSETTE TAPE

When the cassette tape could not be ejected from an electrical malfunction, There are 2 ways to remove a cassette tape.

1. Removal by compulsory unloading.
   a. Press FF and EJECT button simultaneously for more than 3 seconds and set the Service Mode to 7.
   b. Press STOP button in order to unload the mechanism. (Pay attention of tape slack)
   Service Mode Indication:
   7 ** ** (STOP) → 7 0L ** (EJECT)
2. Removal by manual operation by rotating the Loading Motor with the batteries.
   a. Disconnect the AC plug, and remove the Top Panel and the Front Panel by referring the Disassembly Procedures.
   b. Connect three batteries (1.5V spec.) to the Loading Motor in series for supplying 4.5V to rotate the Loading Motor following Fig. S2.

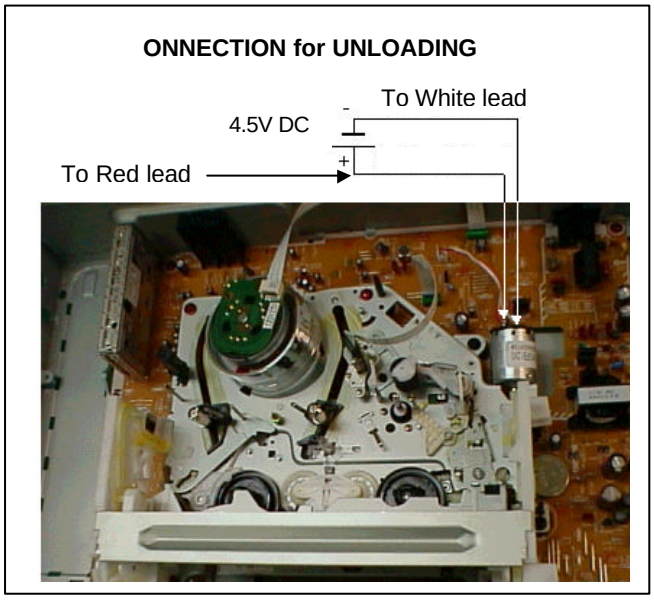


Fig.S2

   c. Stop unloading just before unloading would be completed as shown in Fig.S3.

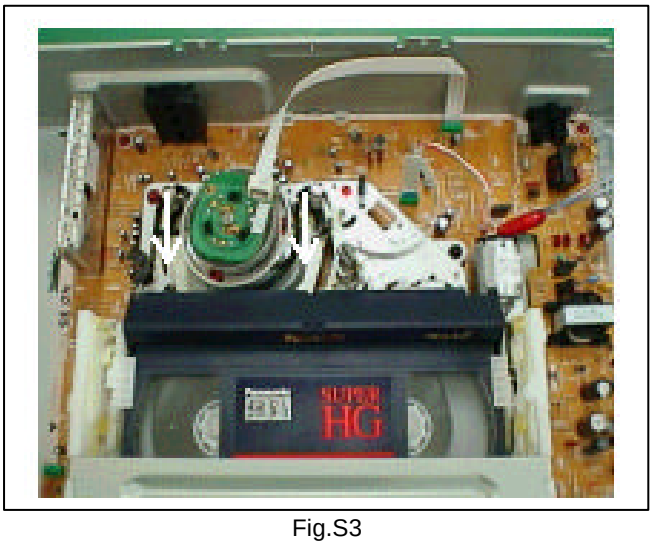


Fig.S3

   d. Then the tape becomes slack as shown in Fig.S4.

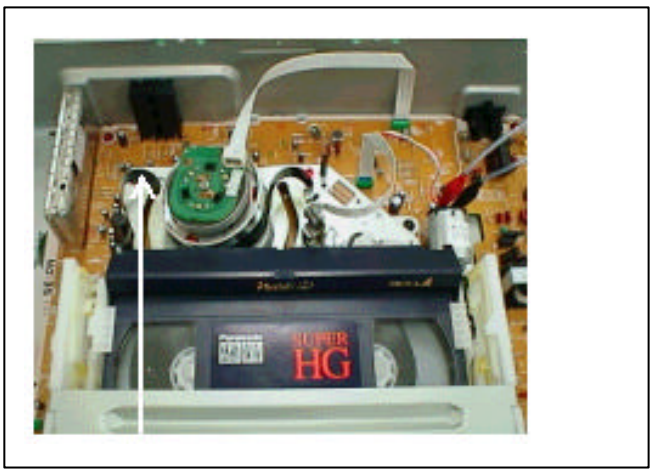


Fig.S4

   e. Rotate the S-Reel by a small minus screwdriver (Fig.S5) to remove the tape slacks as shown in Fig.S6.

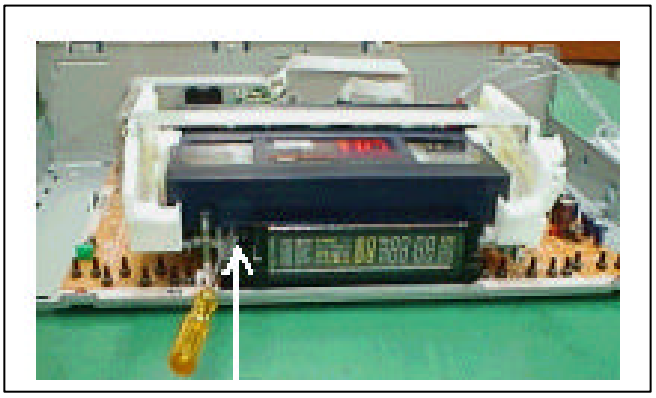


Fig.S5

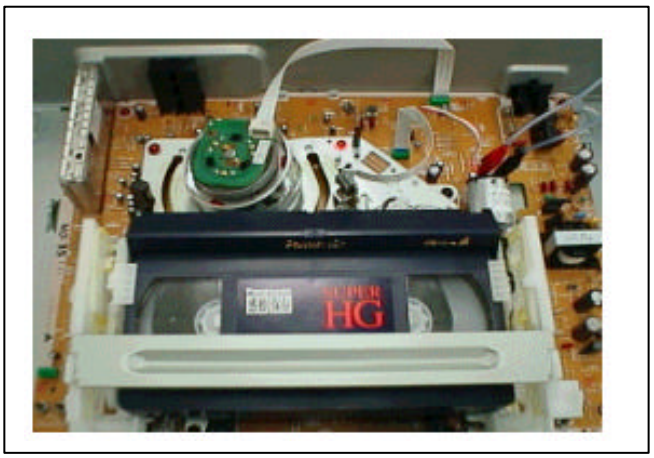


Fig.S6

f. Then unload again to remove the cassette tape as shown in Sig.S7.

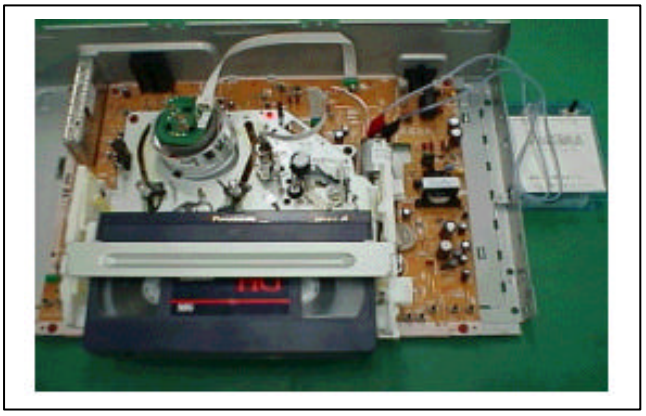


Fig.S7

3. Removal by manual operations after removing the Mechanism Unit.
   a. Disconnect the AC plug, and remove the Top Panel, Front Panel and the Mechanism by referring the Disassembly Procedures.
   b. Remove the Screw (S1) and remove the Loading Motor both shown in Fig.S8.

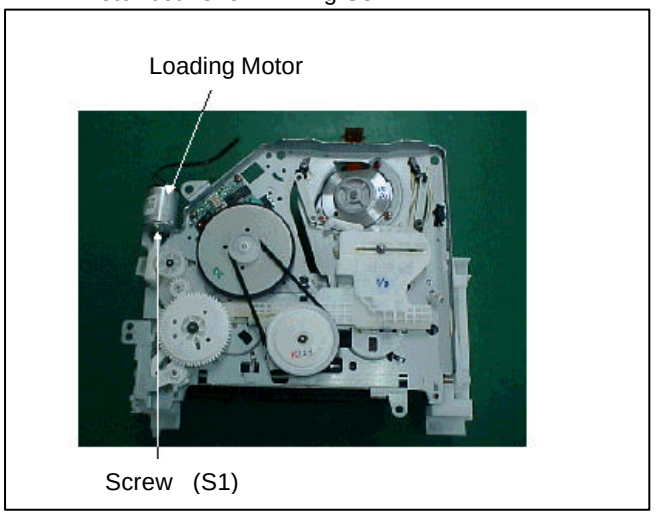


Fig.S8

   c. Rotate the Main Cam Gear counter-clockwise (Fig.S9) until just before the unloading would be completed as shown in Fig.S3.
   d. Rotate the Capstan Motor clockwise (Fig.S9) to remove the tape slacks as shown in Fig.S6.

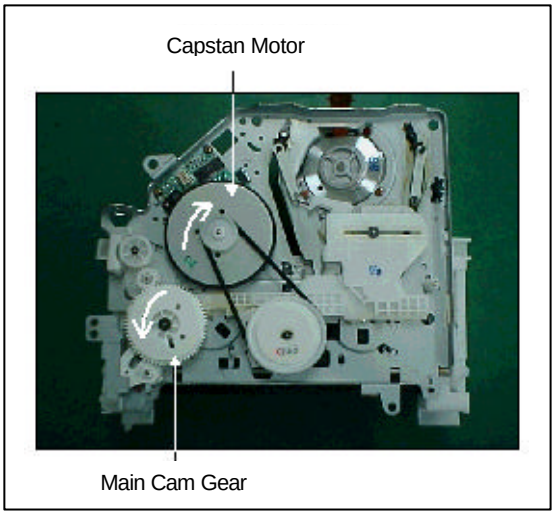


Fig.S9

   e. Rotate the Main Cam Gear counter-clockwise again (Fig.S7) to remove the cassette-tape as shown in Fig.S8.
   f. Set the Position Switch to EJECT POSITION certainly as shown in Fig.S10.

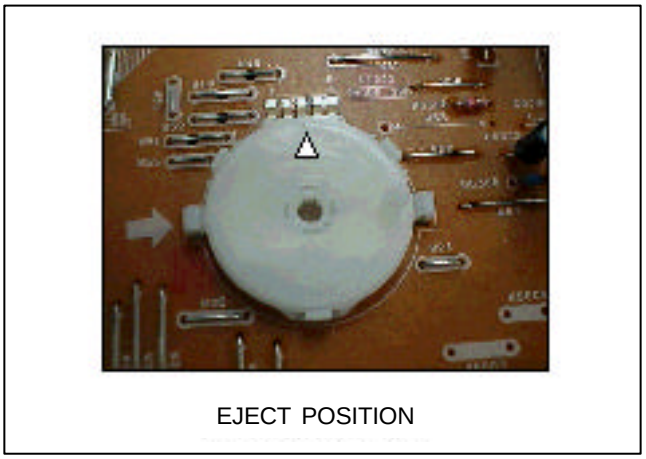


Fig.S10

   g. Install the Loading Motor and tighten screw (S1) as shown in Fig.S8.

3. REMOVAL OF CASSETE HOLDER UNIT & MECHANISM CHASSIS

3-1. REMOVAL OF MECHANISM CHASSIS UNIT

1. Remove the Top Panel and the Front Panel.

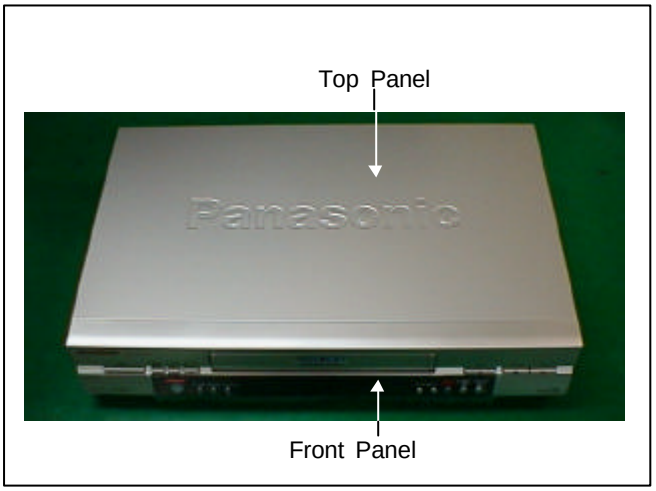


Fig.R1

2. Remove three Black Screws and three Red Screws, and disconnect two Flexible Card Connectors (Cylinder and A/C Head) and P1531.

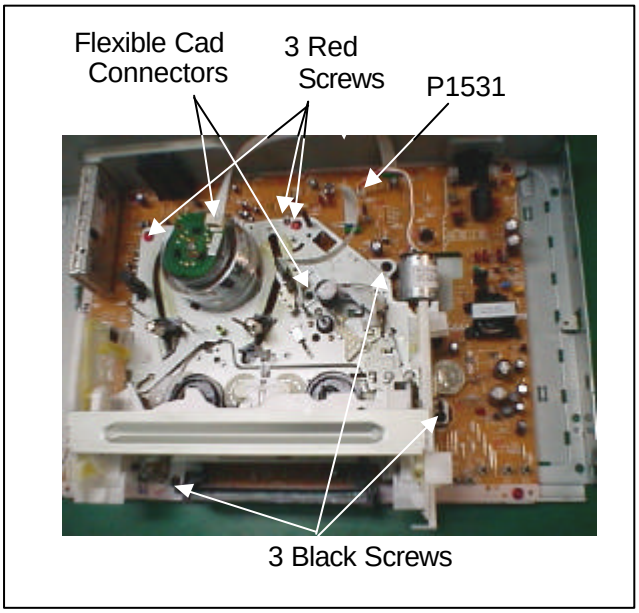


Fig.R2

3-2. REMOVAL OF CASSETTE HOLDER UNIT

1. Remove 2 Red Screws and unlock 3 Locking tabs to remove the Cassette Holder.

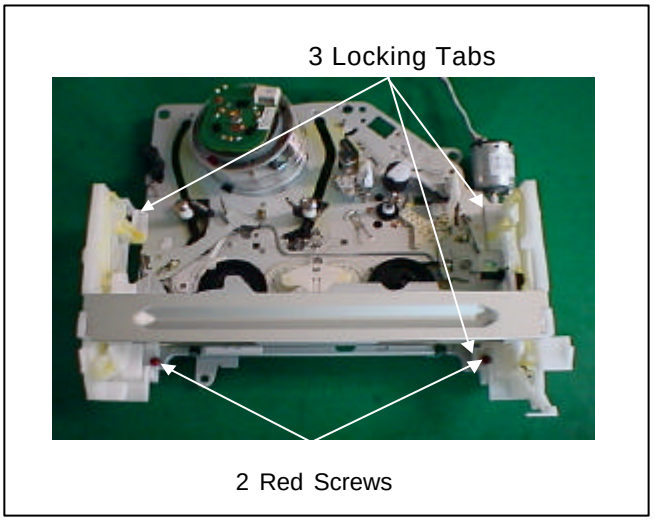


Fig.R3

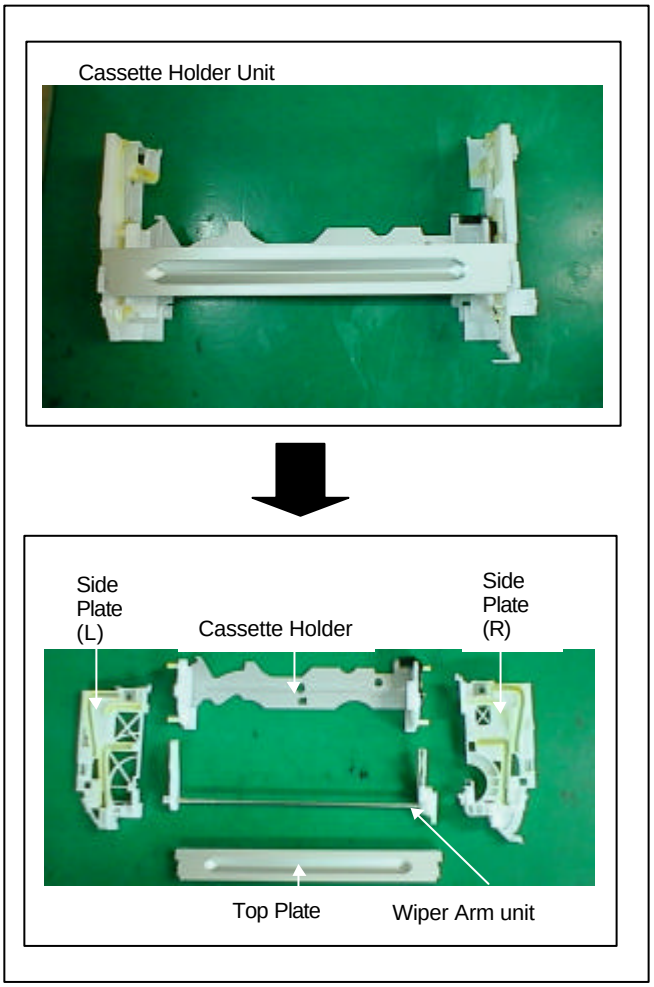


Fig.R4

4. DISASSEMBLY /ASSEMBLY METHOD FOR MECHANISM

4-1. DISASSEMBLY OF MECHANISM

(1) Remove Take-up Brake Spring, Take-up Brake Arm and Take-up Reel Table.

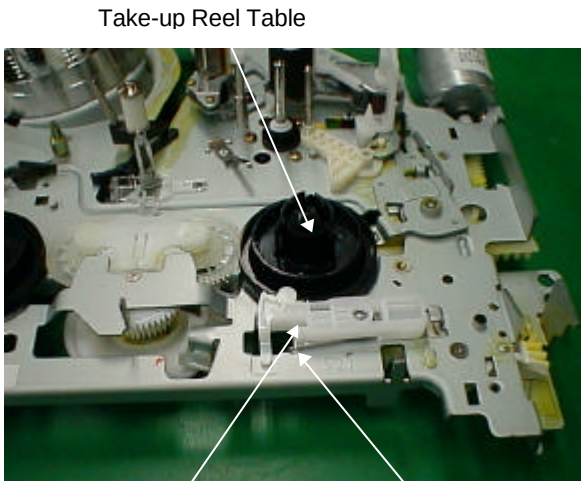


Fig.D1

Fig.D2

(2) Keep Pressing Supply Shaft Holder Unit, slowly turn LED Prism clockwise up to 45° to remove.

Caution:

The LED Prism is made of soft material, handle with care when removing.

(3) Remove Idler Arm and Idler Gears.

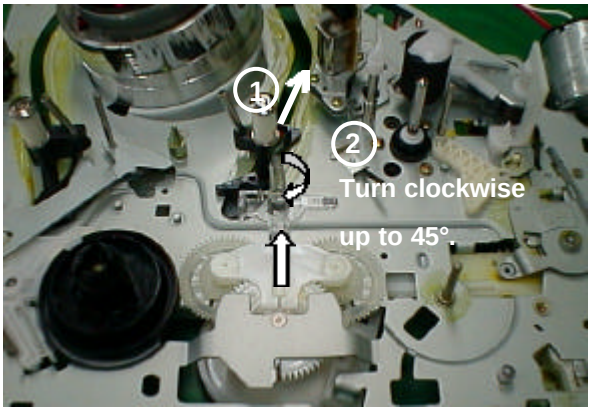


Fig.D3

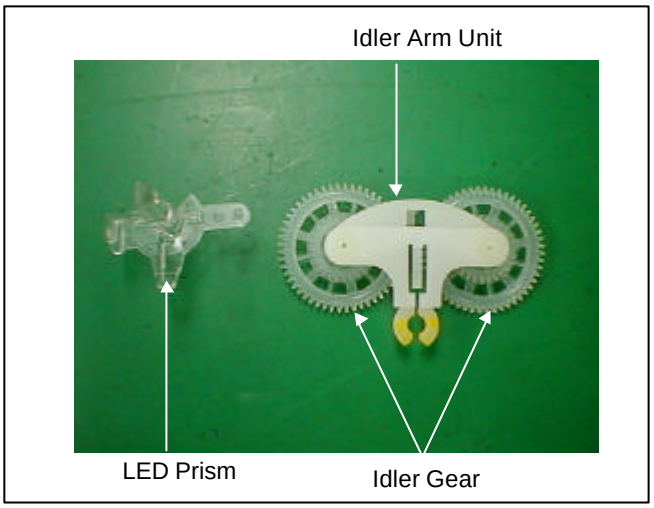


Fig.D4

(4) Remove Tension Spring

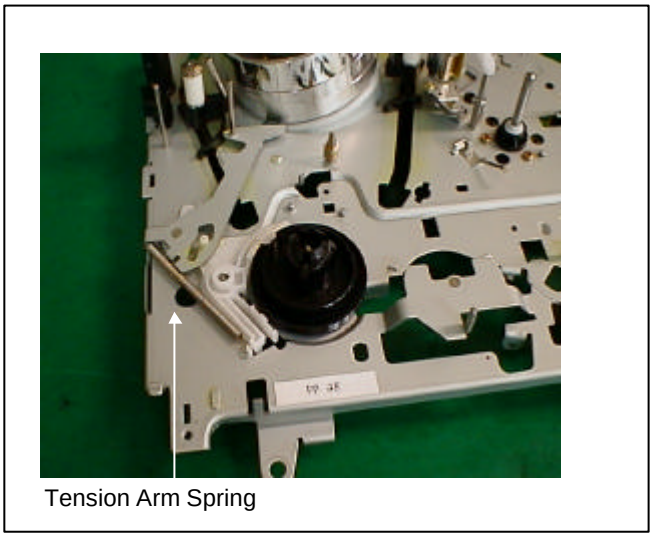


Fig.D5

(5) Unlock the Hooks of the boss on rear side of mechanism chassis to remove the Tension Arm Unit, and remove the Supply Brake Arm Unit and Supply Reel Table.

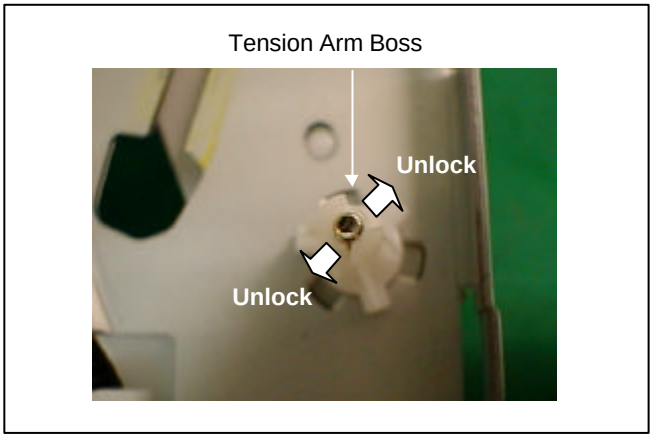


Fig.D6

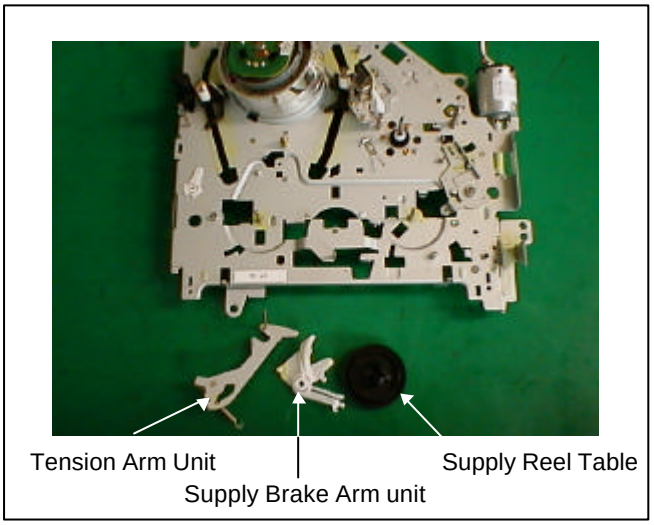


Fig.D7

(6) Remove Opener Piece, Pinch Arm Unit and P5 Arm Unit in order.

Note:

Remove of the Pinch Charge Arm is performed in step (9).

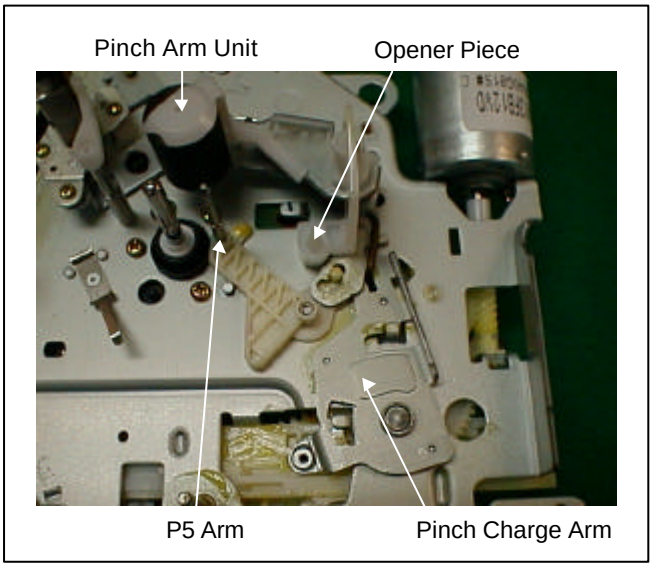


Fig.D8

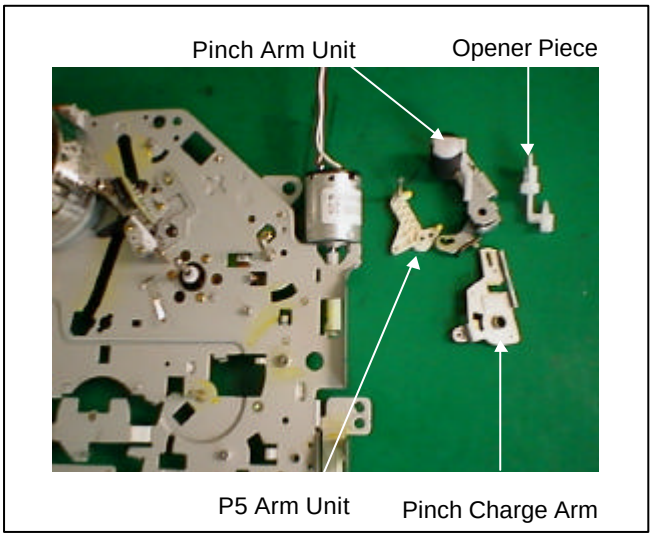


Fig.D9

(7) Remove Cut Washer of the Main Cam Gear, and remove Main Cam Gear and Sector Gear Unit.

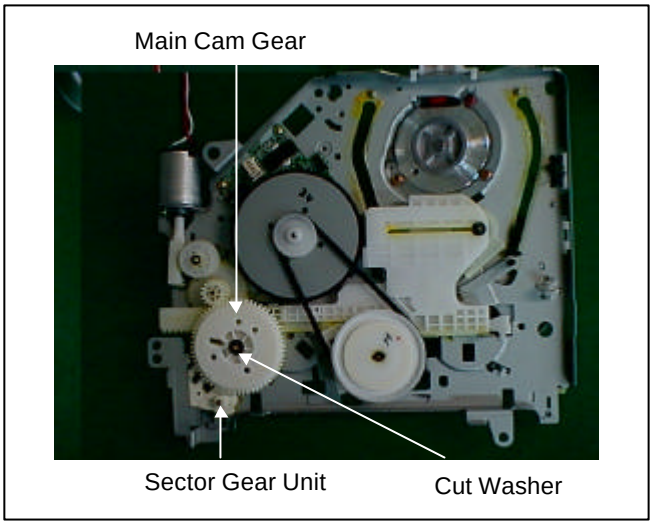


Fig.D10

(8) Remove the Cut Washer of the Center Clutch, and remove Center Clutch Unit, Change Lever Unit and Change Gear Spring, keep paying attention to do not lose the Change Gear Spring and the Cut Washer.

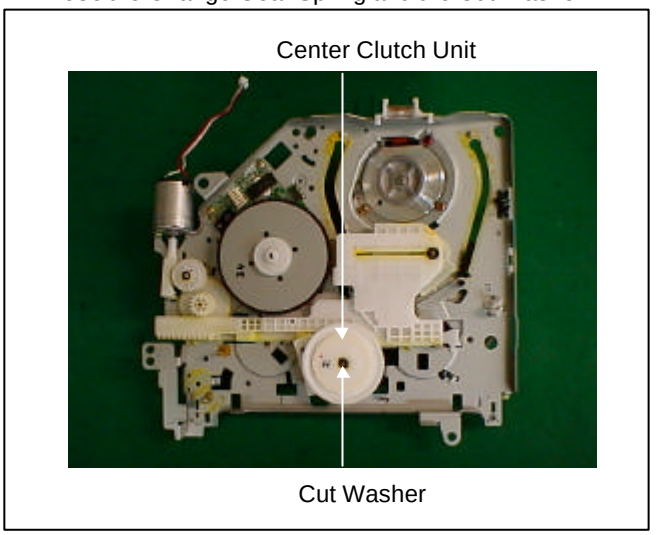


Fig.D11

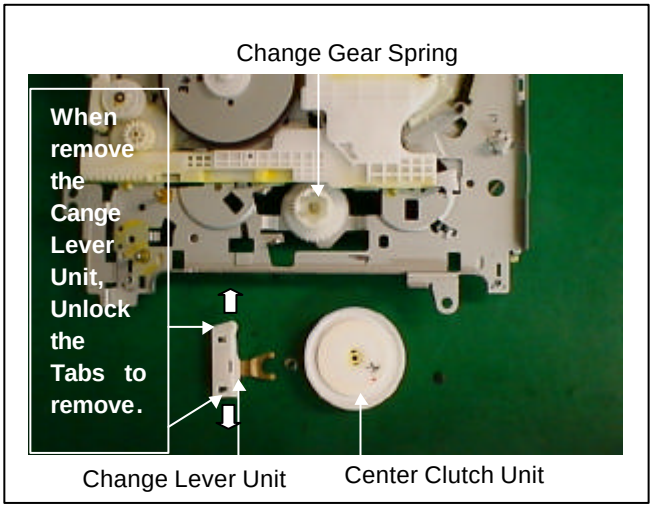


Fig.D12

(9) Remove the Cut Washer, and push the Main Lever rightward to the limit and remove the Main Lever, and turn over the Mechanism Chassis and remove the Pinch Charge Arm shown in Fig.D8.

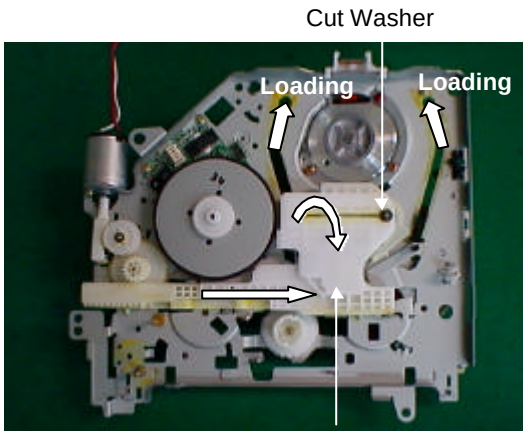


Fig.D13

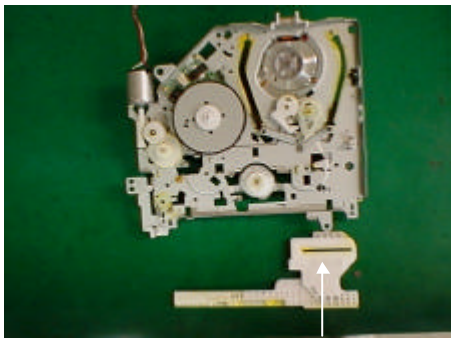


Fig.D14

(10) Remove the Supply Loading Arm Unit and Take-up Loading Arm Unit.

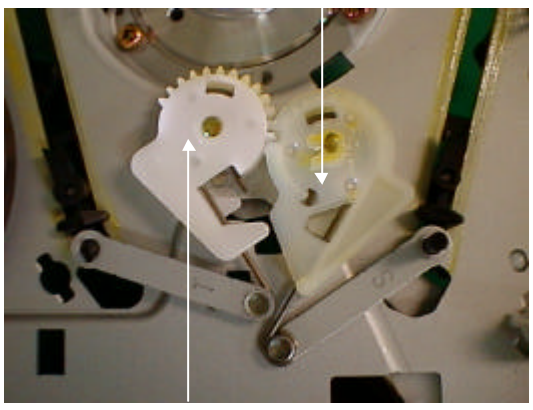


Fig.D15

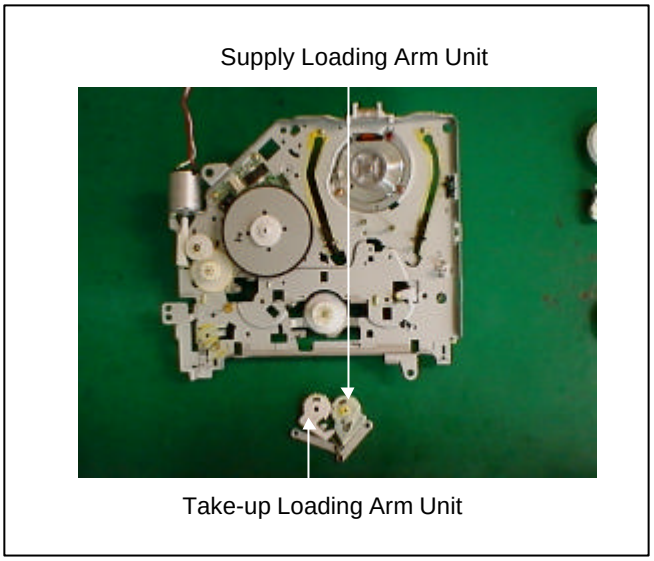


Fig.D16

(11) Pull the Supply Shaft Holder Unit and Take-up Shaft Holder Unit toward you to the limit, and remove them.

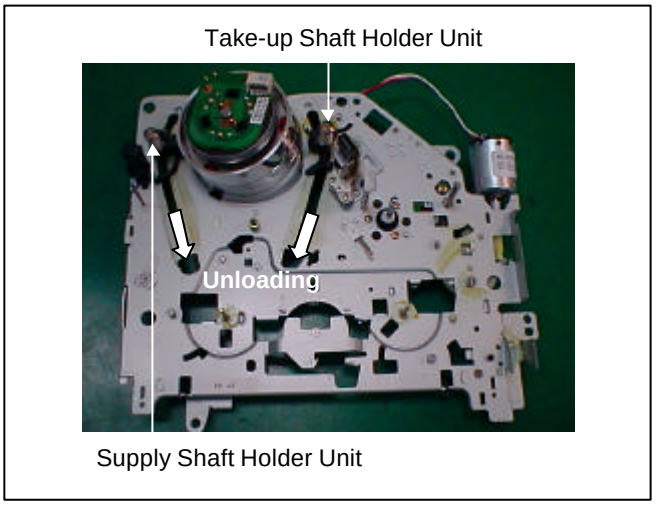


Fig.D17

(12) Remove the Cut Washer for the Torque Clutch Unit, and remove the Torque Clutch Unit, Intermediate Gear and Change Gear.

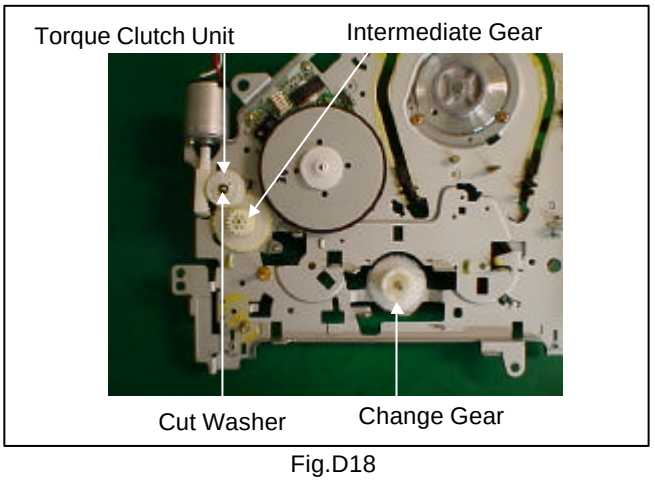
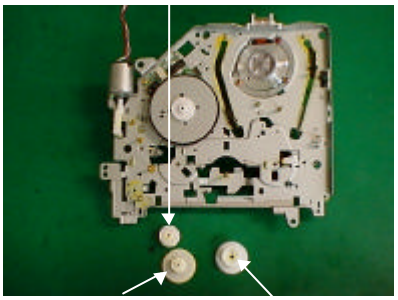


Fig.D18

Torque Clutch

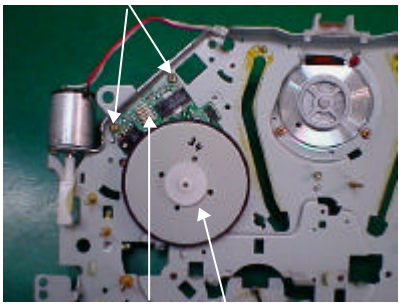


Intermediate Gear Change Gear

Fig.D19

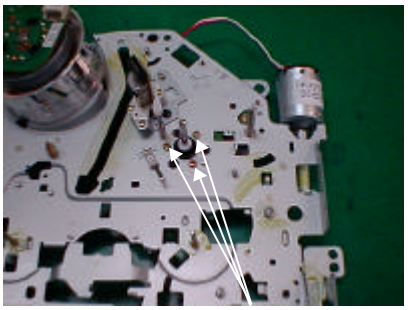
(13) Remove 2 Screws for the Stator and 3 Screws for the Capstan Unit, and remove the Capstan Unit.

2 Screws for Stator



Stator Capstan Unit

Fig.D20

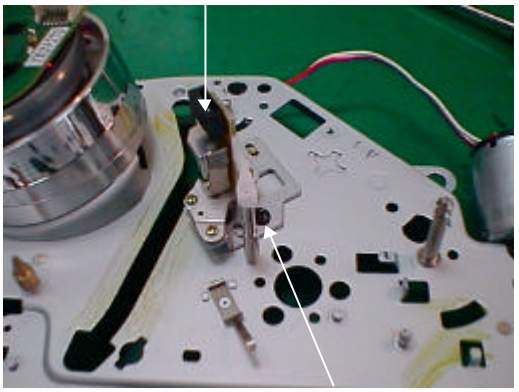


3 Screws for Capstan Unit

Fig.D21

(14) Remove a Screw for A/C Head Unit, and remove the A/C Head Unit.

A/C Head Unit

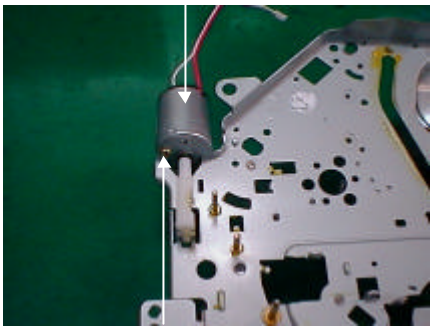


A Screw for A/C Head Unit

Fig.D22

(15) Remove a Screw for the Loading Motor, and remove the Loading Motor Unit.

Loading Motor

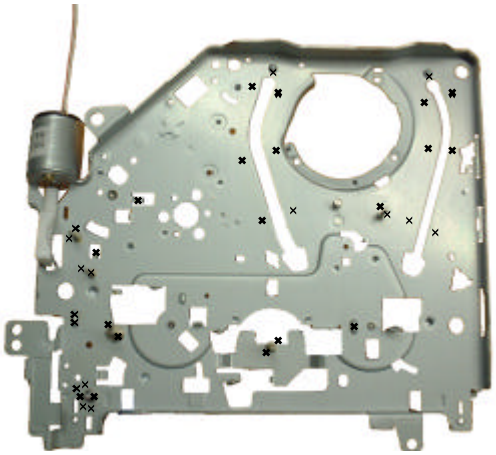


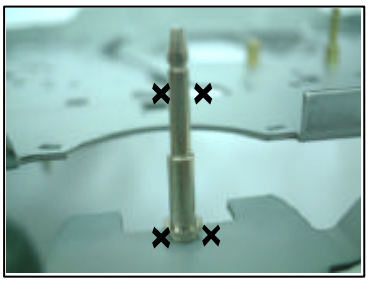
A Screw for Loading Motor

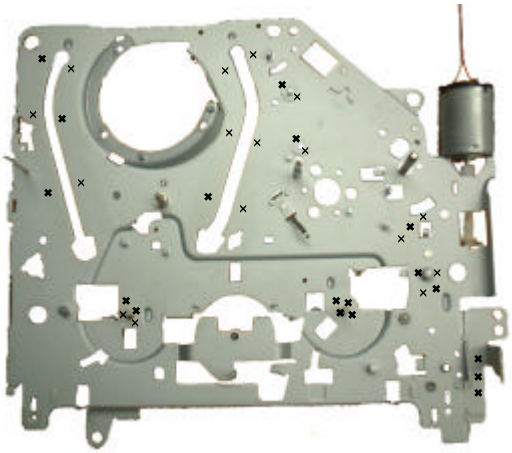
Fig.D23

4-2. ASSEMBLY AND PHASE ADJUSTMENT OF MECHANISM

NOTE:
When install the replacement parts to Chassis; apply the Floil Grease (VFK1298A).







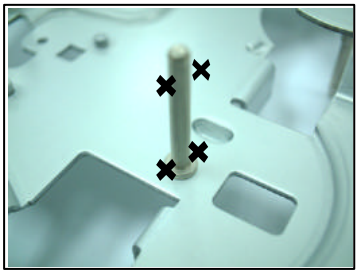
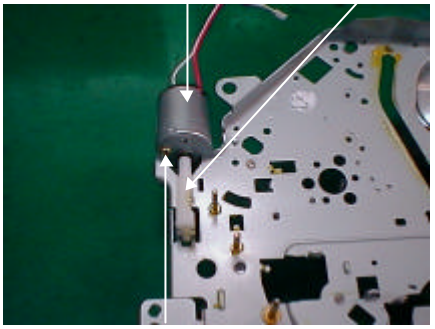


Fig.A1

(1) Install the Loading Motor Unit not to scratch the Worm Gear, and tighten the Screw for the Loading Motor Unit.

Loading Motor Unit Worm Gear

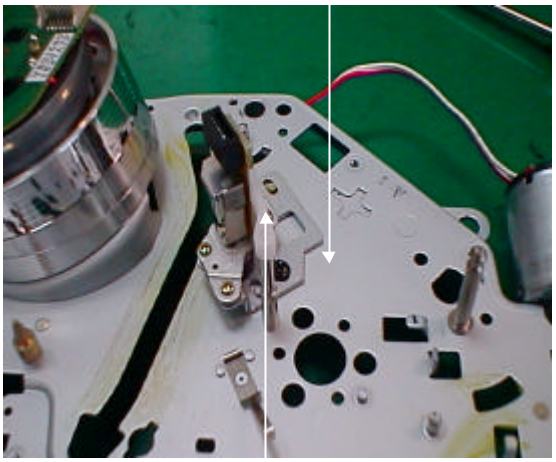


A Screw for Loading Motor

Fig.A2

(2) Install the A/C Head Unit and tighten the Screw for A/C Head Unit.

Screw

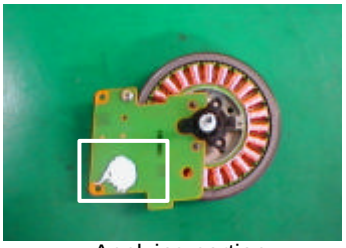


A/C Head Unit

Fig.A3

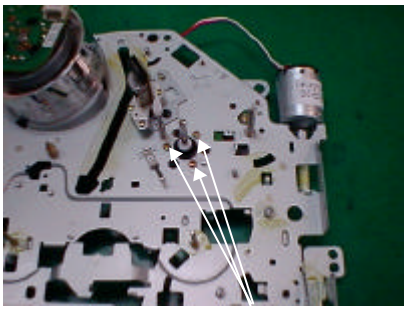
(3) Install the Capstan Motor Unit, and tighten 3 Screws for the Capstan Motor Unit and 2 Screws for Stator.

NOTE:
When install the replacement parts; apply the Silicon Grease (VFK1301) on IC0201 portion.



Applying portion

Fig.A4



3 Screws for Capstan Unit

Fig.A5

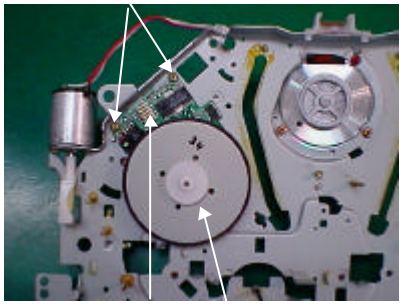


Fig.A6

(4) Install Pinch Charge Arm, P5 Arm Unit, Pinch Arm Unit and Opener Piece in order.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

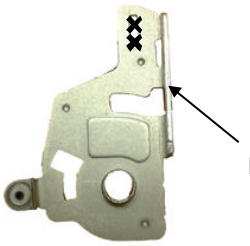


Fig.A7

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

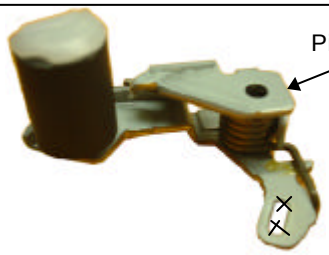


Fig.A8

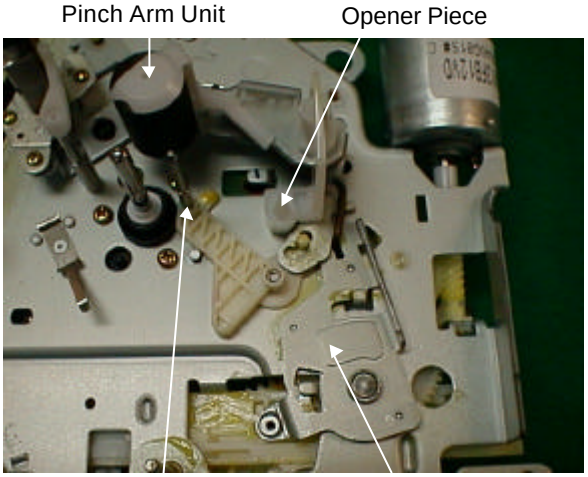


Fig.A9

Note:
Install the Spring of Pinch Arm Unit into the Hole of Pinch Charge Arm as shown in Fig.A10.

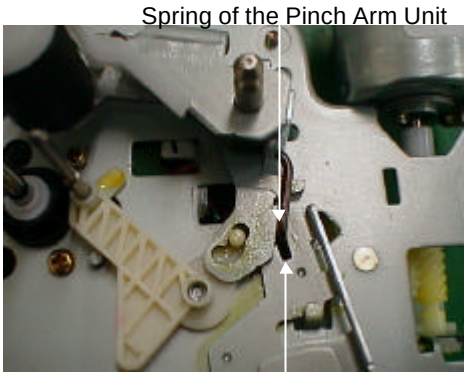


Fig.A10

(5) Install the Supply Shaft Holder Unit and Take-up Shaft Holder Unit.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

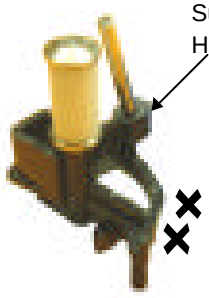


Fig.A11

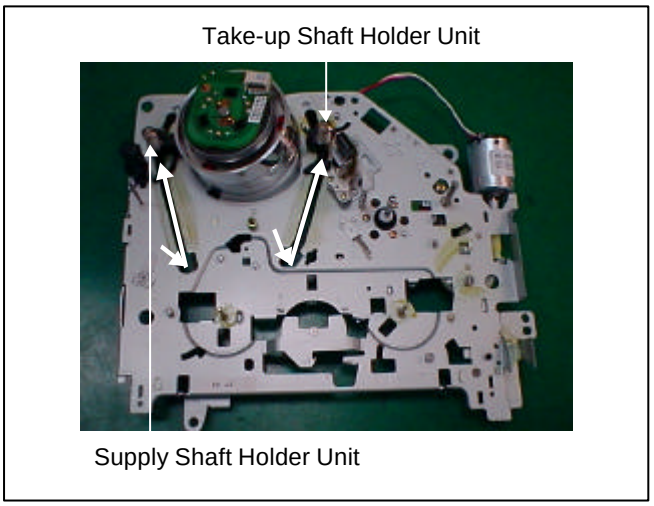


Fig.A12

(6) Install the Intermediate Gear, Torque Clutch and Cut Washer in order.
(7) Install the Change Gear.

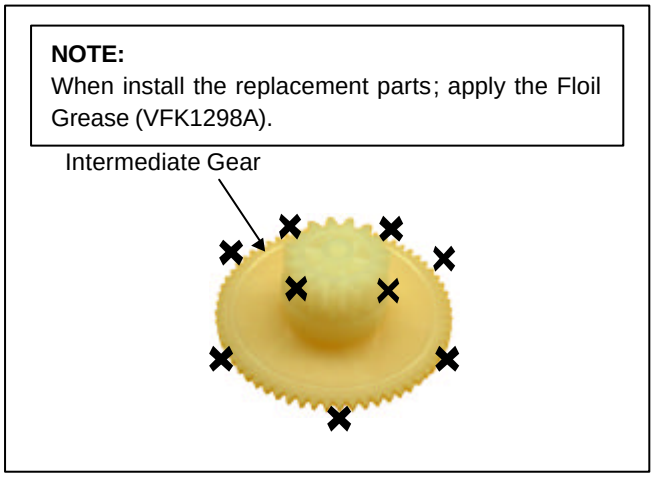


Fig.A13

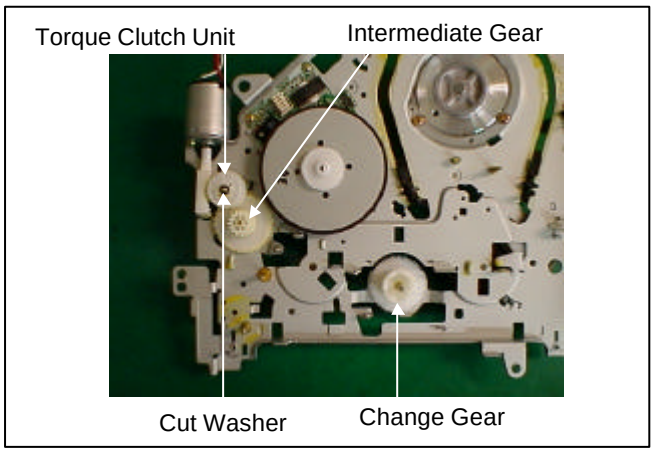


Fig.A14

(8) Install the Take-up Loading Arm Unit.

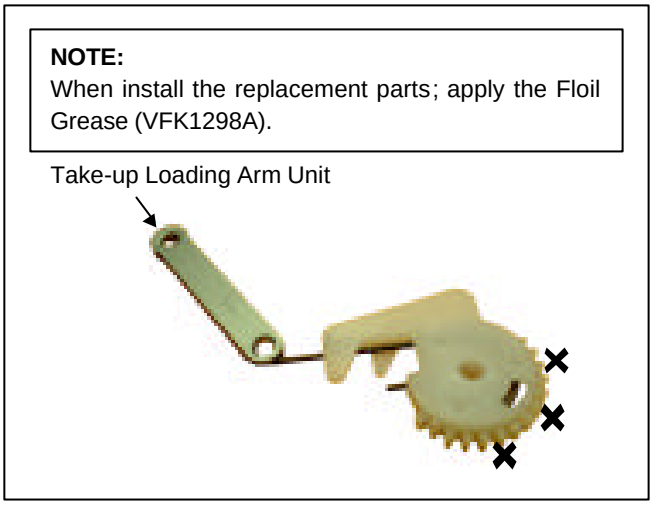


Fig.A15

Note:
Install the boss of the Take-up Shaft Holder Unit into the Hole of the Take-up Loading arm Unit.

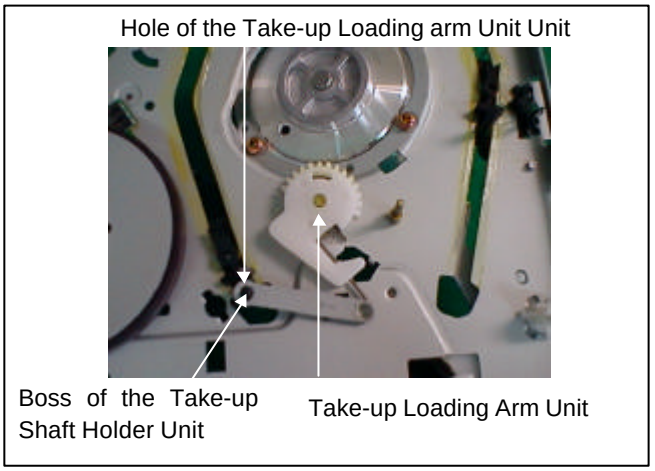


Fig.A16

(9) Install the Supply Loading Arm Gear Unit, adjusting the phase between Take-up Loading Gear and the Supply Loading Gear as shown in Fig.A12.

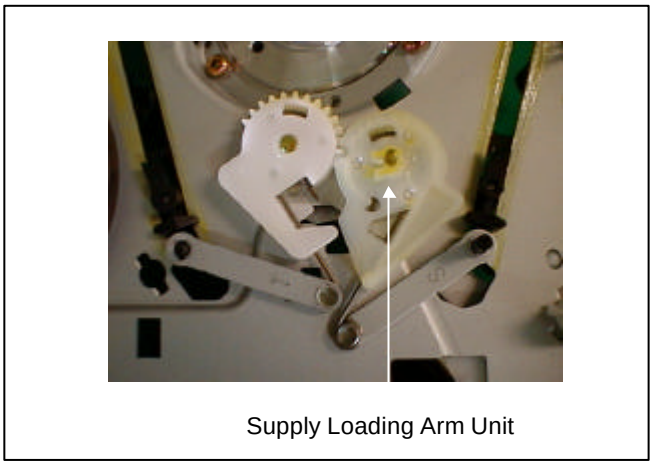
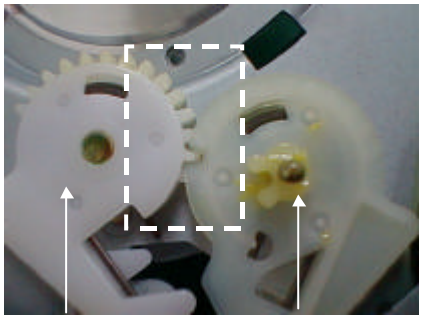


Fig.A17

Phase Adjustment

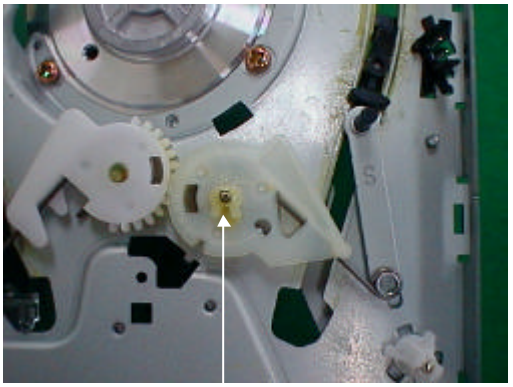


Take-up Loading Arm Gear

Supply Loading Arm Gear

Fig.A18

(10) Set the Concave portion of Take-up Loading Arm Gear to the position shown in Fig.A19.



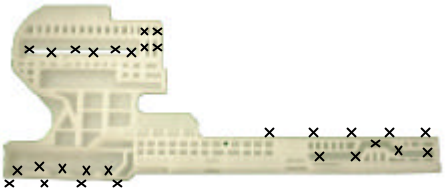
Concave portion of Take-up Loading Arm Gear

Fig.A19

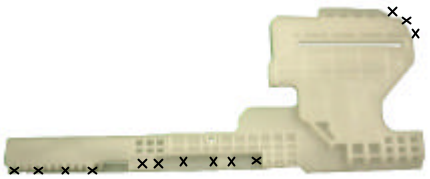
(11) Install the Main Lever so that the convex portion on rear side of the Main Lever (Fig.A21) is fitted into the concave portion of Take-up Loading Arm Gear (Fig.A19), and install the Cut Washer as shown in Fig.A22.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

Main Lever

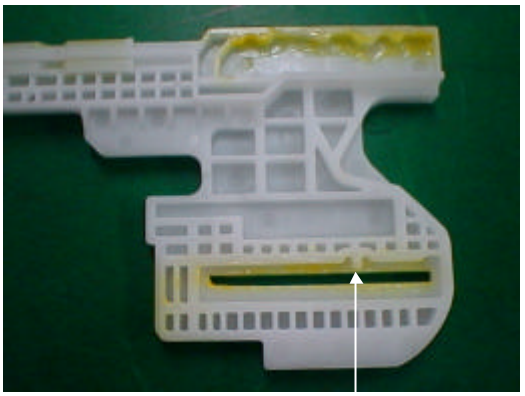


a) Inside



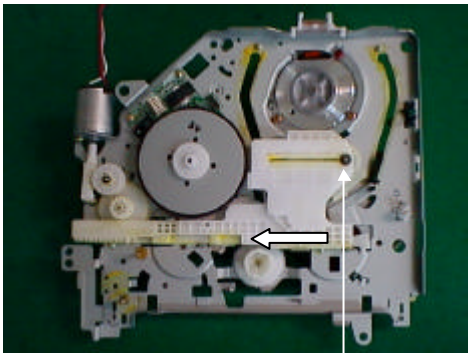
b) Outside

Fig.A20



Convex portion on rear side of the Main Lever

Fig.A21



Cut Washer

Fig.A22

(12) Push the Main Lever leftward to adjust the phase so that the hole of Main Lever is met with the hole of Chassis as shown in Fig.A16.

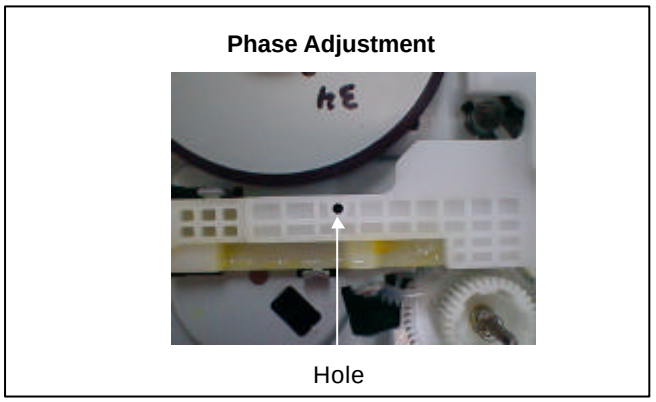


Fig.A23

(13) Install the Change Lever into the aperture of Change Gear.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

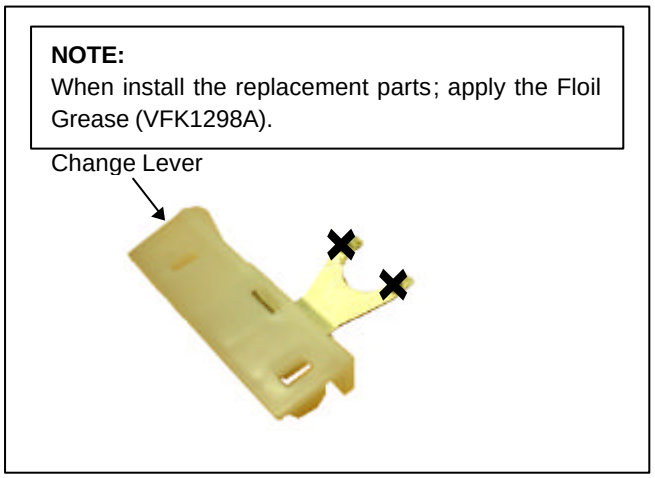


Fig.A24

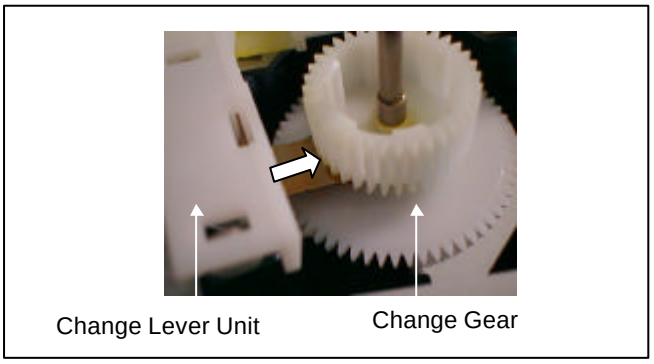


Fig.A25

(14) Install the Change Gear Spring through the shaft for Change Gear.

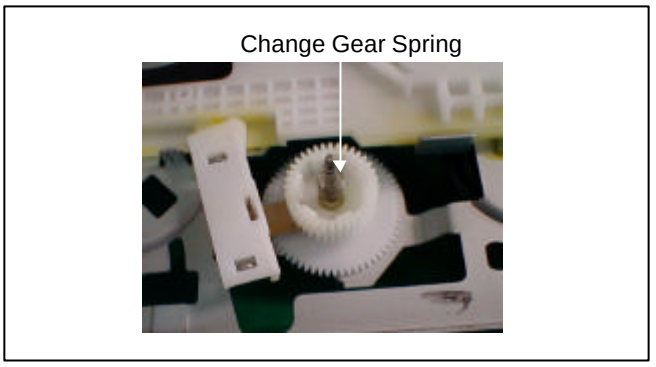


Fig.A26

(15) Install the Center Clutch Unit and the Cut Washer.
Note:
Keep paying attention to do not lose the Change Gear Spring and the Cut Washer.

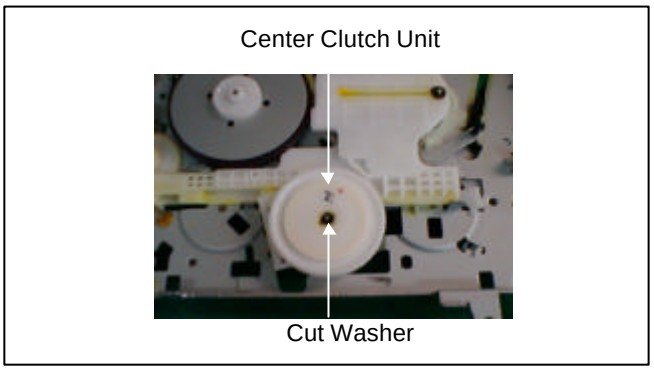


Fig.A27

(16) Install the Sector Gear Unit so that the Phase Adjustment Hole of Sector Gear Unit is met with the Adjustment Hole of Chassis.

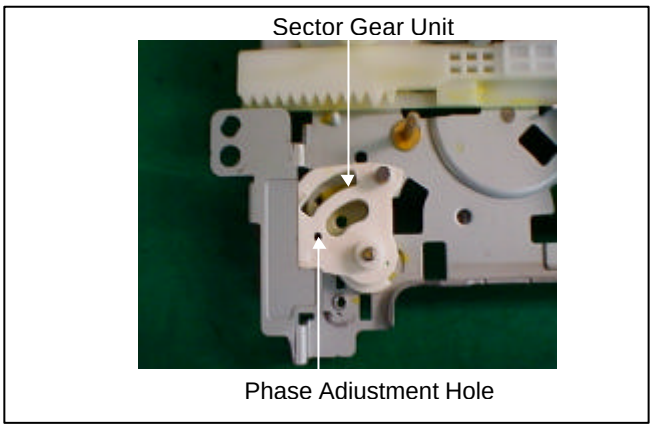


Fig.A28

(17) Install the Main Cam Gear so that the Phase Adjustment Hole of Main Cam Gear is met with the hole of Chassis, and install the Cut Washer.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

Main Cam Gear

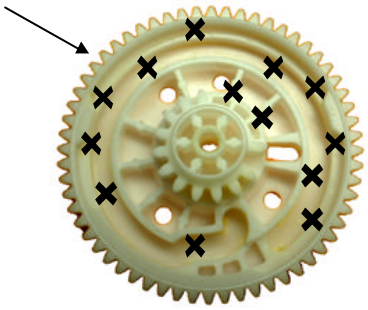
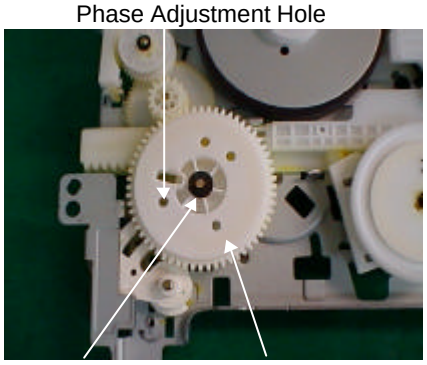


Fig.A29

Phase Adjustment Hole

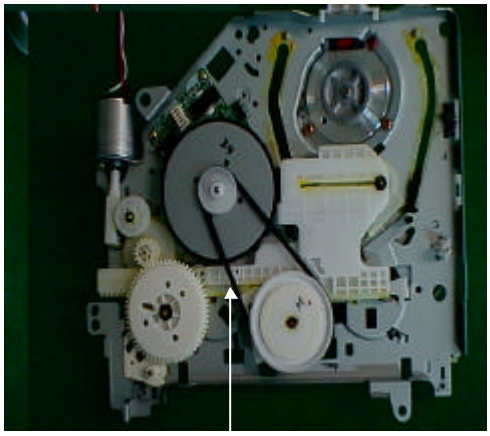


Cut Washer

Main Cam Gear

Fig.A30

(18) Install the Capstan Belt.



Capstan Belt

Fig.A31

(19) Install the Supply Brake Arm Unit.

Supply Brake Arm Unit

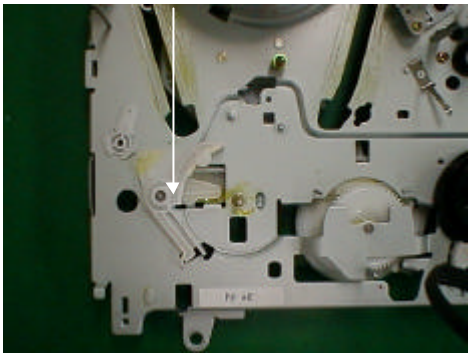
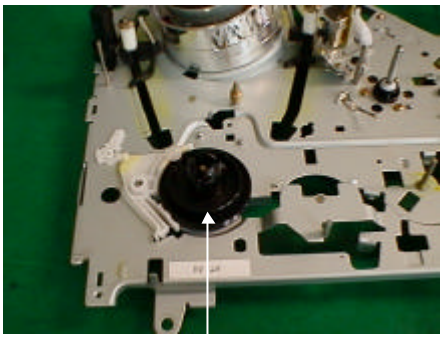


Fig.A32

(20) Install the Supply Reel Table.



Supply Reel Table

Fig.A33

(21) Install the Tension Arm Unit into the Tension Arm Boss.

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

Tension Arm Unit

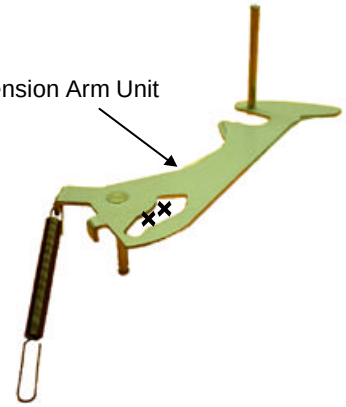
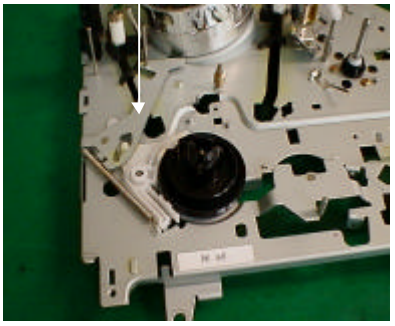


Fig.A34

Tension Arm

(Bottom View)



Tension Arm Boss

(Bottom View)

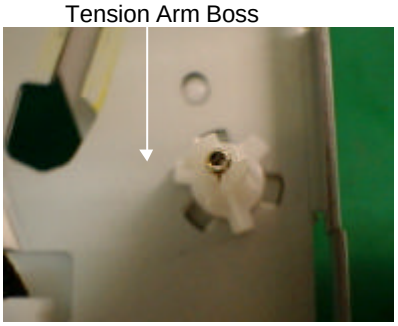
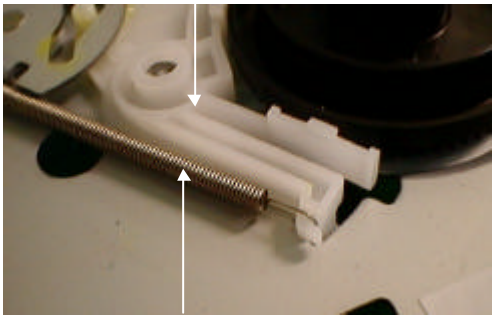


Fig.A35

(22) Install the Tension Spring to the Supply Brake Arm Unit.

Supply Brake Arm Unit

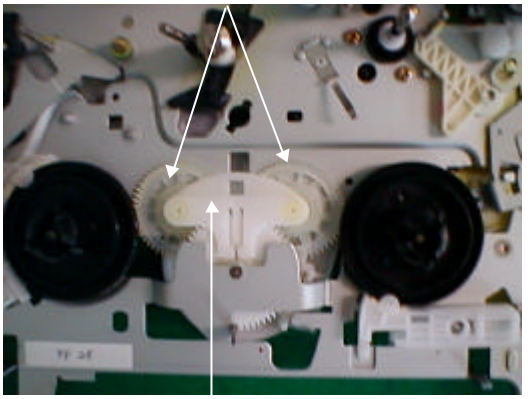


Tension spring

Fig.A36

(23) Confirm that the Idler Gears are installed onto the Idler Arm, and install the Idler Arm to Chassis.

Idler Gears



Idler Arm

Fig.A37

(24) Install the LED Prism and turn it counter-clockwise.

LED Prism

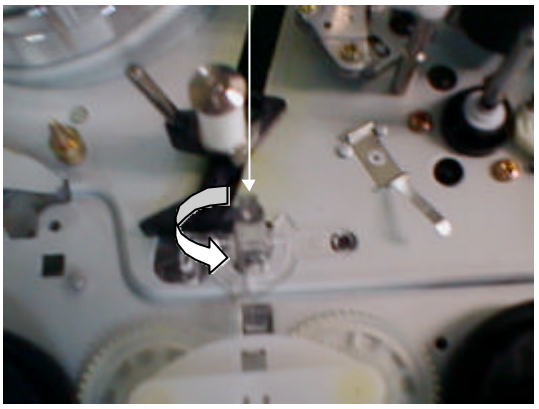
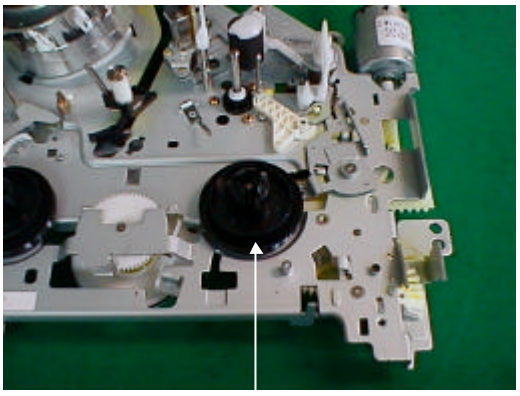


Fig.A38

Caution:

The LED Prism is easy to break, therefore treat it carefully.

(25) Install the Take-up Reel Table.

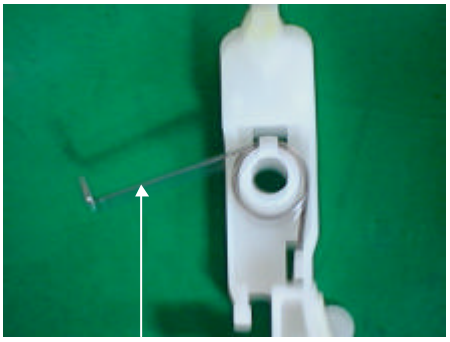


Take-up Reel Table

Fig.A39

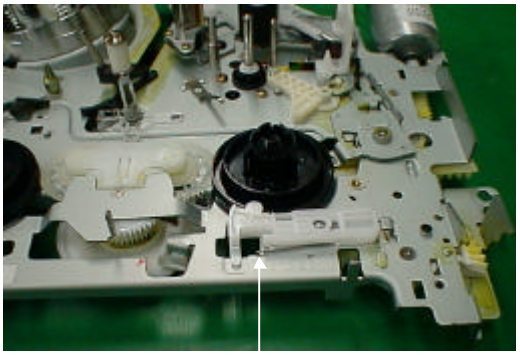
(26) Install the Take-up Brake Arm Unit, and then hook the Take-up Brake Spring to Chassis.

Take-up Brake Arm Unit



Take-up Brake Spring

Fig.A40



Hook the Take-up Brake Spring

Fig.A41

(27) Confirm the Mechanism Phases so that see through the Adjustment Hole and hole of Chassis at three Adjustment portions.

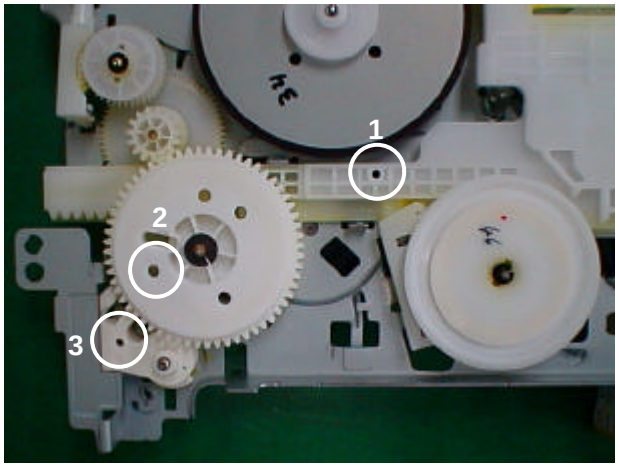
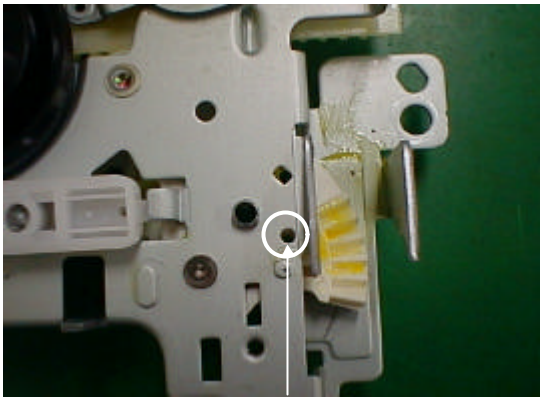


Fig.A42

INSTALLATION OF THE SLOT-IN UNIT

(28) Confirm the phase of Sector Gear.



Confirm that the Adjustment Holes of Sector Gear and Chassis are seen through.

Fig.A43

(29) Place the Cassette Holder on front end of the Slot-in Unit.

(30) Insert the convex portions of the Slot-in Unit into the grooves of Chassis.

Front View

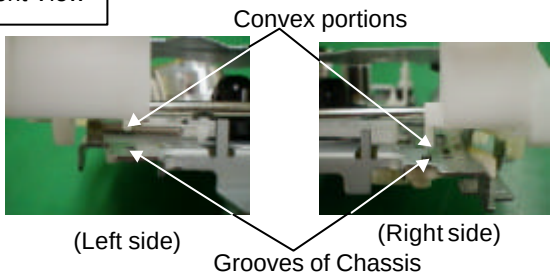


Fig.A44

(31) Reconfirm Slot-in Unit is correct phase as shown in Fig.A35 (Sharp edge of Wiper Arm R is in line with the Sector Gear Hole).

NOTE:
When install the replacement parts; apply the Floil Grease (VFK1298A).

Wiper Arm R

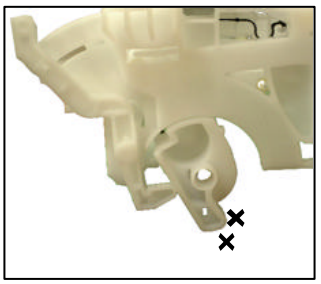


Fig.A45

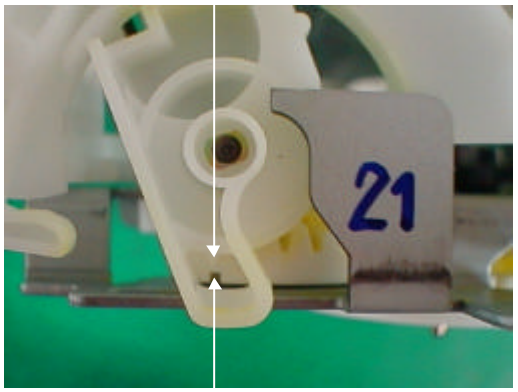


Fig.A46

(32) Insert the convex portions of Side Plate R & L into the grooves of Chassis.

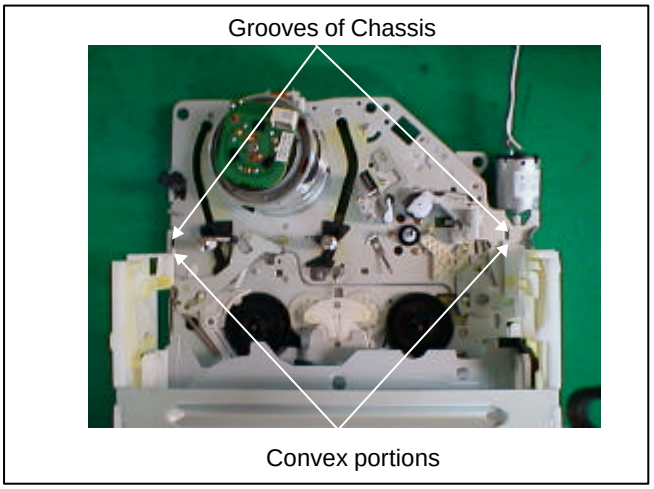


Fig.A47

(33) Tighten the 2 Screws.

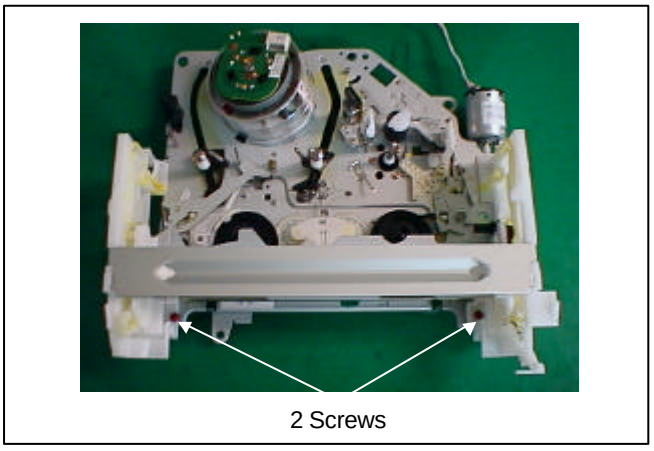


Fig.A48

(34) Place the Mode Switch to EJECT position.

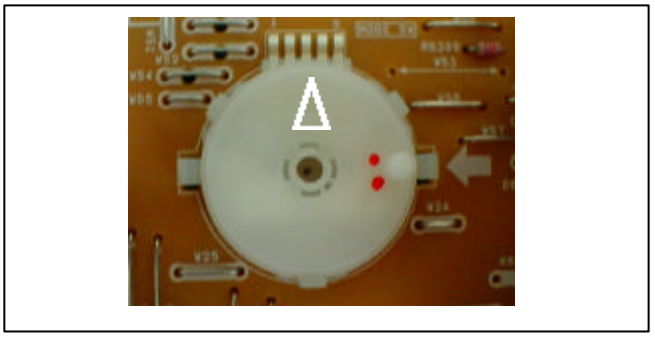


Fig.A49

(35) Install the Mechanism Chassis onto the Main C.B.A., and tighten three Black Screws and three Red Screws with earth lead, and connect two Flexible Card Connectors (Cylinder and A/C Head) and P1531.

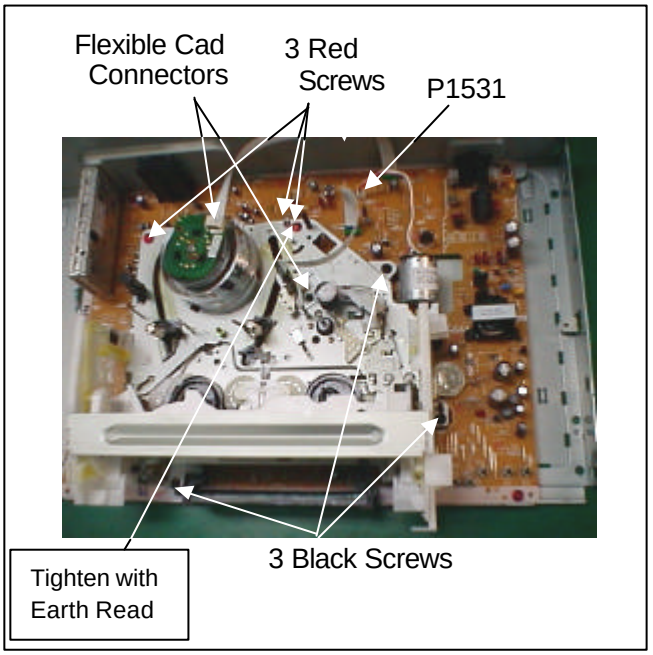


Fig.A50

PHASE ADJUSTMENT OF P4 CAP

(36) Adjust the P4 Cap so that the Direction of P4 Cap is on y-axis with tolerance ± 5 °.

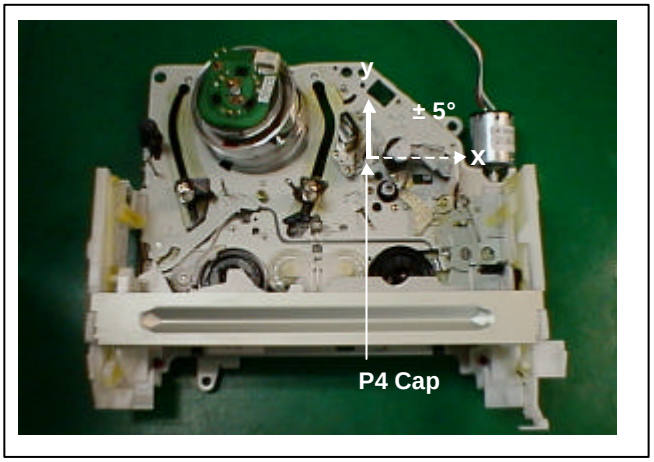


Fig.A51

5. MECHANICAL ADJUSTMENT PROCEDURE

5-1. P2 AND P3 POST ADJUSTMENT (PREADJUSTMENT)

Equipment required:
Post Adjustment Screwdriver (VFK0329)

(1) Remove the Top Plate.
(2) Turn the Loading Motor unit until the unloading completes.
(3) Rotate the P2 and P3 Posts clockwise to the end.(Fig.M1)
(4) Rotate the P2 and P3 Posts twice counterclockwise.(Fig.M1)

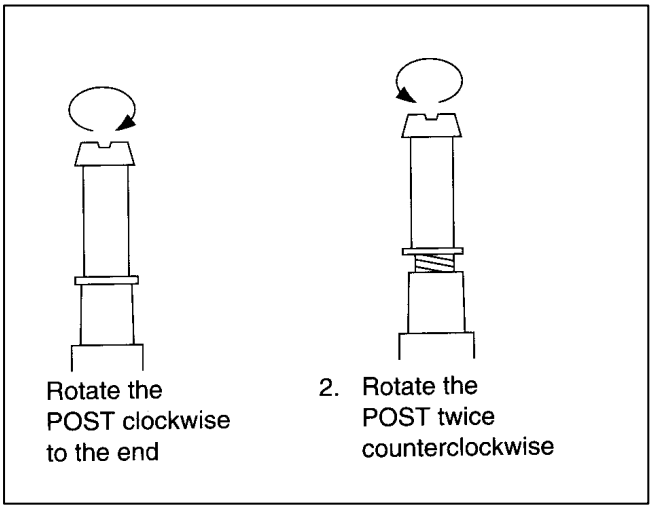


Fig.M1

(5) Playback the cassette tape and make sure that the edges of the tape are not curing at the bottom or top ends of the P2, P3 and P4 Posts as shown in Fig.M2.

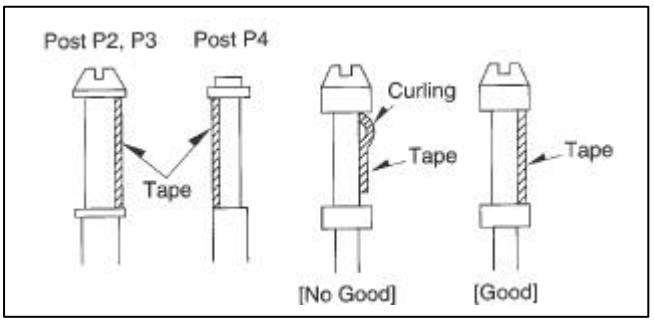


Fig.M2

6) If the curing appears, readjust the P2 and P3 Posts.

5-2. TAPE INTERCHANGEABILITY ADJUSTMENT

Carry out the following procedures for Tape Interchangeability Adjustment to do it correctly and smoothly.

(1) P2 AND P3 POST ADJUSTMENT
(2) ADJUSTMENT OF P4 POST
(3) HEIGHT ADJUSTMENT OF A/C HEAD
(4) FINE-ADJUSTMENT OF A/C HEAD
(5) ADJUSTMENT OF X-VALUE (PREADJUSTMENT)
(6) FINE-ADJUSTMENT OF X-VALUE

If the Tape Interchangeability Adjustment is not perfect, repeat the above procedures from (1) to (6).

CAUTIONS:

Turn the Auto-Tracking to off, and set the tracking control to center fixing position.

To make an Adjustment Mode for Tape Interchangeability, press the FF, REW and EJECT buttons simultaneously 3 times to set the Service Mode 2. Then the Auto Tracking becomes off.
* In case of the VCR mounts JOG SHUTTLE, turn the shuttle ring to FF and then press EJECT button.

NOTE:
Cleaning the Tape Transport path before adjusting of the Tape Interchangeability. The detail portion is shown below.

Cleaning portions:
P0 Post, Tension Posts, FE Head, P2 Post, Supply Inclined Post, Cylinder Unit, Take-up Inclined Post, P3 Post, A/C Head, P4 Post, Pinch Roller, Capstan Shaft and P5 Post.
Note:
FE Head, Cylinder Unit, A/C Head and Capstan Shaft are more important parts and pay attention to clean them.

5-2-(1). P2 AND P3 POST ADJUSTMENT

Equipment required:
Alignment Tape (PAL/SECAM: VFJ8125H3F)
(NTSC: VFM8080HQFP)
Post Adjustment Screwdriver (VFK0329)

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig.M3.

NOTE:
To get a stable waveform of the Head Amp output (observation point TW3001 and TW2001 located on Main C.B.A.) on the oscilloscope, use the head switching pulse as a triggering signal as shown in Fig.M3.

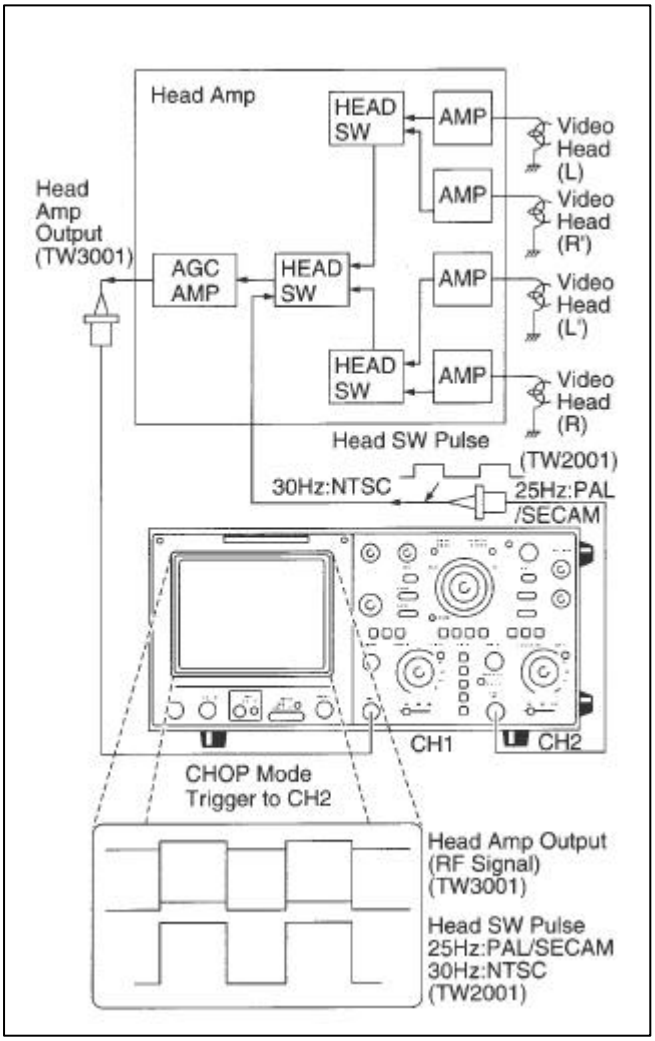


Fig.M3 Connection of Oscilloscope

(2) Playback the Alignment Tape.
(3) If the RF envelope appears like example "A" or "B" in Fig. M4, then adjustment of the tape guide post (P2: Entrance) is necessary.
(4) Adjust the Tape Guidepost (2) with the post adjustment screwdriver so that the RF envelope waveform at the entrance portion becomes flat as shown in Fig.M4"C".

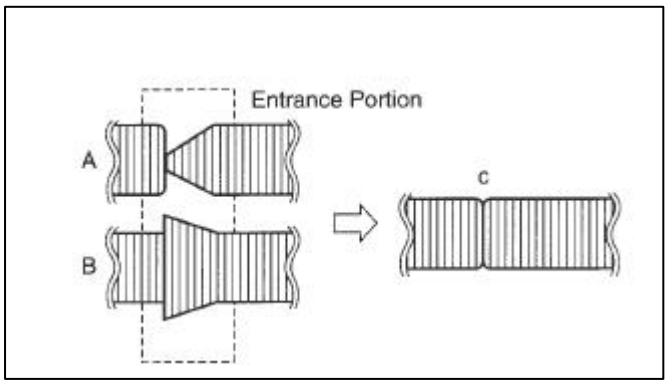


Fig.M4

(5) If the envelope appears like "D" or "E" in Fig.M5, then adjustment of the tape guide post (P3: Exit) is necessary.
(6) Adjust the tape guidepost (P3) in the same manner as the P2 post so that the exit portion becomes flat as shown in Fig.M8"F".

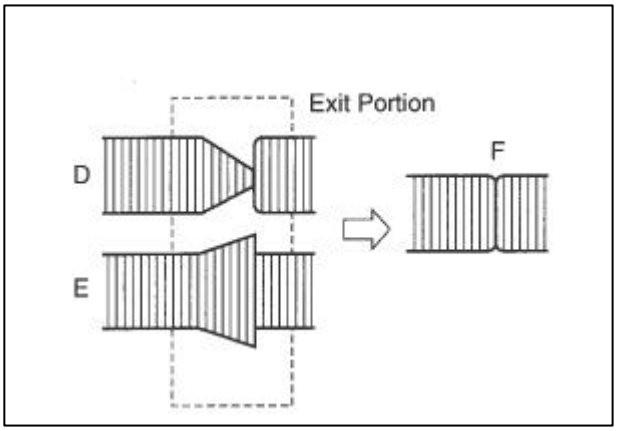


Fig.M5

(7) Keep pressing the tracking up/down (∧ or ∨ buttons on the remote controller unit. The output envelope should vary nearly parallel with other condition as shown in Fig.M6.
(8) Set the tracking control into center fix position by pressing the tracking up/down (∧ or ∨ simultaneously and adjust for maximum RF envelope, whilst being as flat as possible.

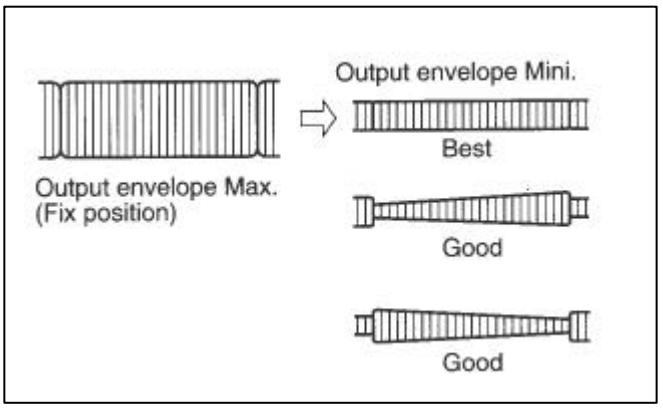


Fig.M6

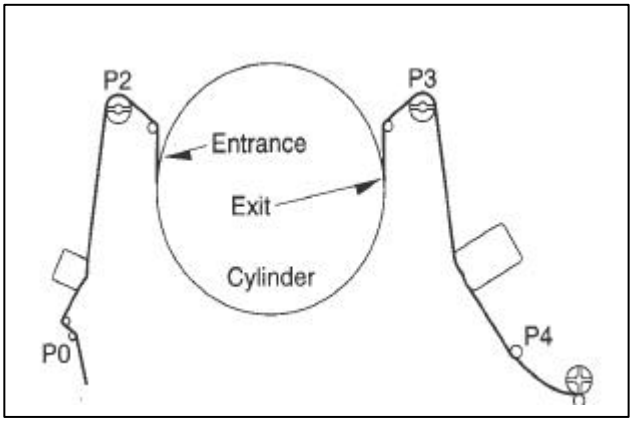


Fig.M7

Aim for P2, P3 Posts Adjustment

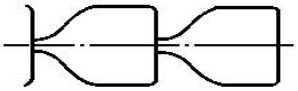
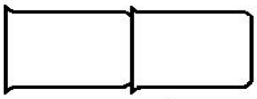
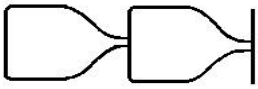
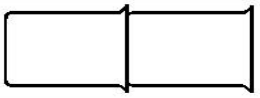
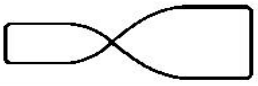
Envelope	Post Name	Adjustment Method
	P2 Post	Turn P2 Post counter-clockwise (Approx. 1/2 revolutions)
	P2 Post	Turn P2 Post clockwise (Approx. 1/4 revolitions)
	P3 Post	Turn P3 Post clockwise (Approx. 1/2 revolutions)
	P3 Post	Turn P3 Post counter-clockwise (Approx. 1/4 revolutions)
	P2/P3 Posts	Turn P2 Post clockwise (Less than 1 revolution) Turn P3 Post counter-clockwise (Less than 1 revolution)

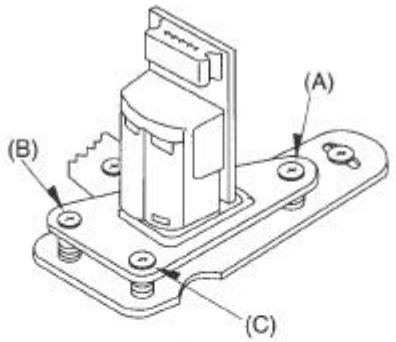
Fig.M8

5-2-(2). ADJUSTMENT OF P4 POST

(1) Install A/C Head on the Mechanism Chassis by one screw.
(2) Playback the Alignment Tape.
(3) Rotate the screw (A) or (B) until the wrinkle appears on the lower edge of tape at P4 Post.
(4) Rotate the screw (A) or (B) until the wrinkle just disappears on the lower edge of tape at P4 Post.
(5) Connect the oscilloscope to audio output terminal.
(6) Rotate the screw (C) until audio signal is maximized.

NOTE:

1. The relation between the rotation direction of screws (A) and (B) and the condition of wrinkle on the lower edge at P4 Post as shown in Fig.M9.
2. Make sure that there is not the inclined wrinkle between P4 Post and Pinch Roller.



	SCREW (A)	SCREW (B)
So wrinkle appears on the lower edge of tape	COUNTER CLOCKWISE	CLOCKWISE
So wrinkle disappears on the lower edge of tape	CLOCKWISE	COUNTER CLOCKWISE

Fig.M9

5-2-(3). HEIGHT ADJUSTMENT OF A/C HEAD

< When moving the A/C Head up >

1) Rotate the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2) Rotate the screw (B) counterclockwise until the wrinkle just disappears on the lower edge of tape at P4 Post.
3) Rotate the screw (C) counterclockwise until the audio signal is maximized.

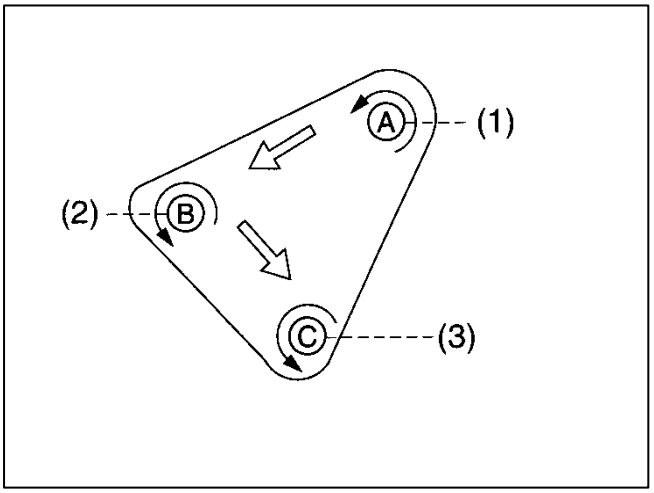


Fig.M10

< When moving the A/C Head down >

1) Rotate the screw (B) clockwise until the wrinkle appears on the lower edge of tape at P4 Post.
2) Rotate the screw (A) clockwise until the wrinkle just disappears on the lower edge of tape at P4 Post.
3) Rotate the screw (C) clockwise until the audio signal is maximized.

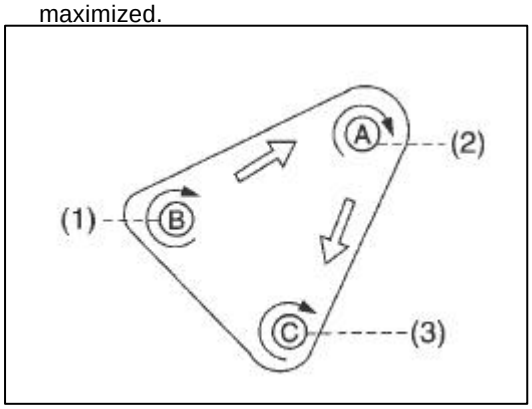


Fig.M11

5-2-(4). FINE-ADJUSTMENT OF A/C HEAD

(1) Connect the oscilloscope to the output of the Head Amp as shown in Fig.M3.
(2) Playback the Alignment Tape.
(3) Make sure that the condition of the wrinkle at P4 Post. If the condition of the wrinkle is out of specification, P4 Post adjustment has to be performed as follows.
Turn the screw (A) counterclockwise until the wrinkle appears on the lower edge of tape at P4 Post.
Turn screw (A) clockwise until the wrinkle disappears on the lower edge of tape at P4 Post.
(4) Turn the screw (C) until the audio signal is maximized.

NOTE:

Make sure that the audio output does not increase when push the upper and lower edges of tape around A/C Head.

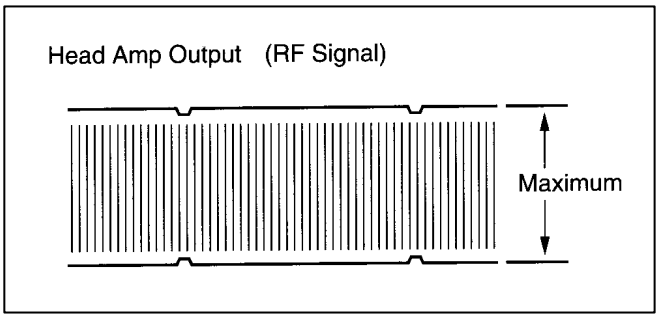


Fig.M12

5-2-(5) ADJUSTMENT OF X-VALUE (PREADJUSTMENT)

Equipment Required:
Fine Adjustment Gear Driver (VFK0330)
Specification: Less than 15msec.

(1) Connect the oscilloscope to the audio output and the video output.
Both output signals should be fixed by the external trigger.
(2) Playback the Alignment Tape and set the tracking control into center fix position.
(3) Adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) to meet the signal fault portion of the audio output and the video output signals (Less than 15msec.).
(4) After meeting the signal fault portion, audio A/C Head position by the Fine Adjustment Gear Driver (VFK0330) until the video envelope is maximized.

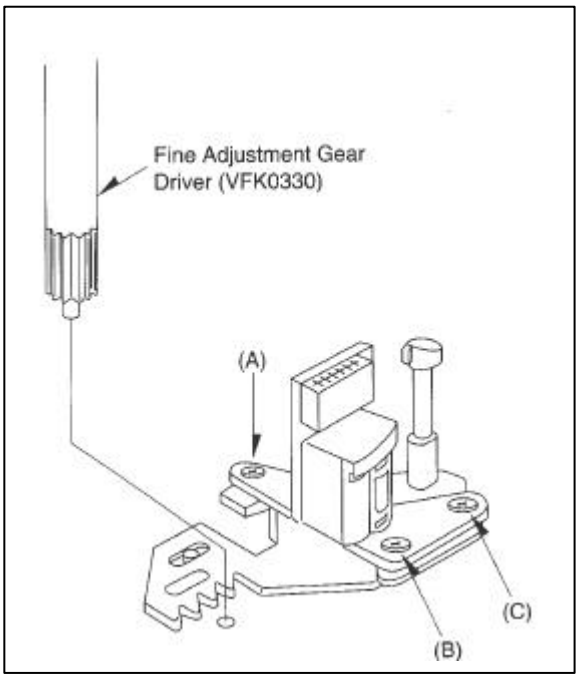


Fig.M13

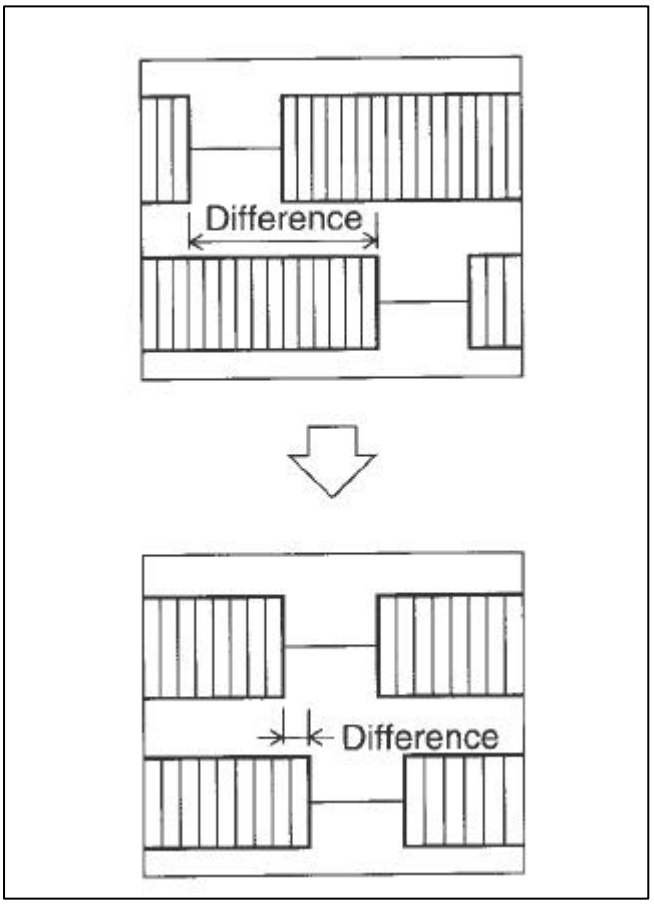


Fig.M14

5-2-(6). FINE-ADJUSTMENT OF X-VALUE

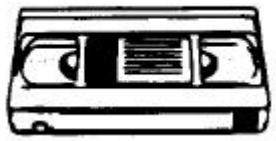
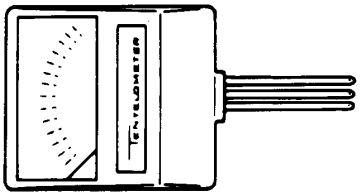
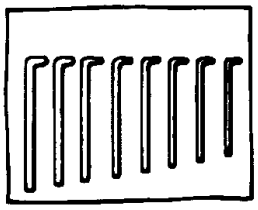
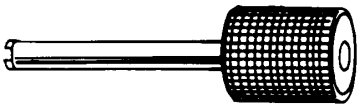
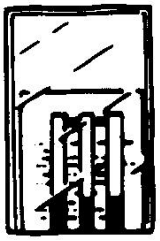
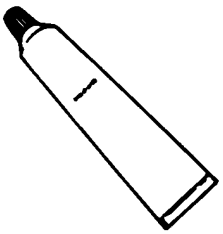
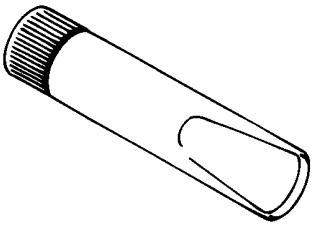
Equipment Required:
Fine Adjustment Gear Driver (VFK0330)

(1) Connect the oscilloscope to the audio output and the video output.
Both output signals should be fixed by the External trigger.
(2) Playback the Alignment Tape and set the tracking control into center fix position.
(3) Adjust A/C Head position by the Fine Adjustment Gear Driver (VFK0330) until the video envelope level is maximized at the tracking center fix position.

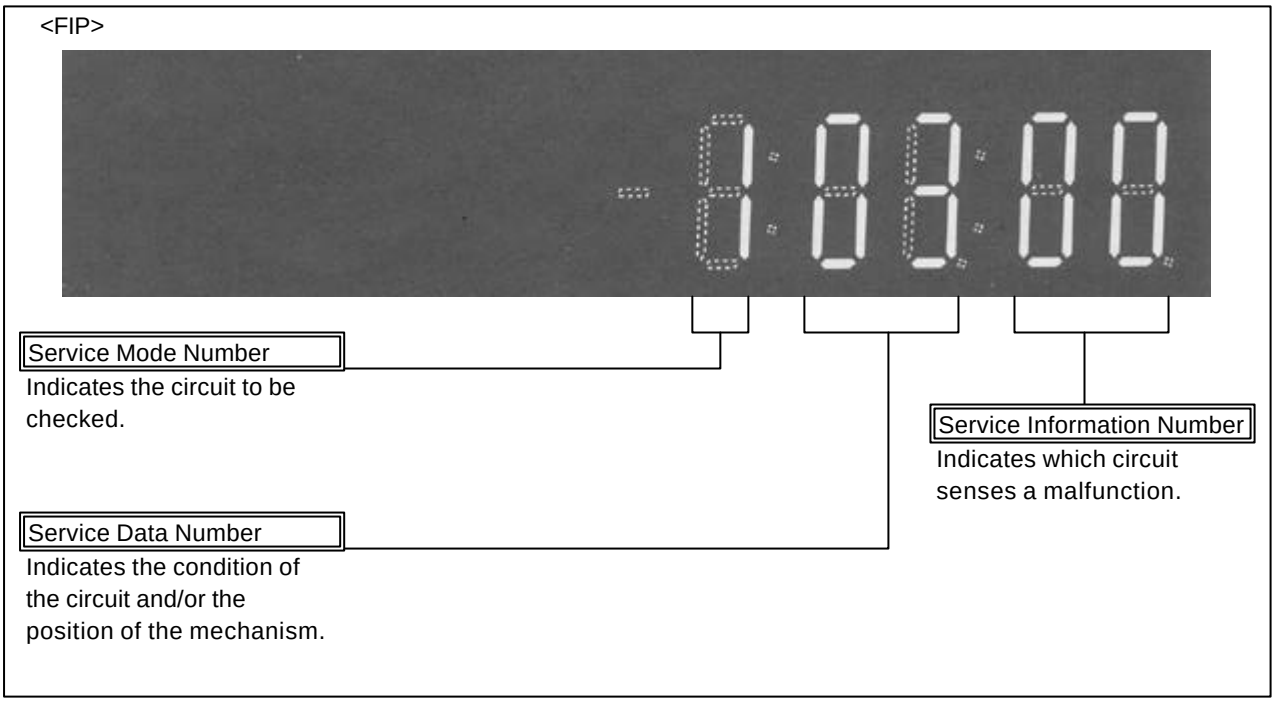
NOTE:

During X-Value Fine Adjustment, in case the video envelope level becomes 0, Pre-adjustment of X-Value should be adjusted again due to it is possible to vary the X-Value adjustment.

Servicing Fixture & Tools

VFJ8125H3F PAL VHS Alignment Tape VFM8080HQFP NTSC VHS Alignment Tape 	VFK0132 Back Tension Meter (Tentelometer, Made in U.S.A.) 	VFK0335 Retaining Ring Remover (3mm/4mm)
VFK0326 Hex. Wrench Set (0.7,0.9,1.2,1.5,1.6,2.0,2.4,3.0mm) 	VFK0329 Post Adjustment Screwdriver 	VFK0330 Fine Adjustment Gear Driver
VFK27 Head Cleaning Stick 	VFK1024 Morlytone Grease 	VFK1298A Floil Grease
VFK1301 Silicone Grease 		

6. SERVICE INFORMATION DISPLAY


<FIP>
Service Mode Number
Indicates the circuit to be checked.
Service Information Number
Indicates which circuit senses a malfunction.
Service Data Number
Indicates the condition of the circuit and/or the position of the mechanism.

6-1. Purpose of Service Information Display

This information aids trouble shooting by indicating the source of the Error. The service mode number & service data number are used by the technician during repair while the service information can be used by consumer to diagnose Error allowing the technician to provide a more accurate repair cost estimate and reduce time.

6-2. Turning on Service Information Display

Press FF, REW and EJECT buttons simultaneously.

In the Service Information Display, there are four digits divided into 3 functions.

The first digit indicates which of the 7 service modes that the unit is currently in.

The second and third digits are service data that indicate the condition of the circuit or the mechanism being checked.

The forth digit is the service information display, it is to be used by the consumer to help determine the source of an Error. The service information display operates independently of the service modes and stores the fault indication in memory for as long as AC power is not supplied.

Service Number	Contents	Contents of Indication on minute	Contents of Indication on second	Remarks
0	Indication for the inner data of IC6001	VCR mode (Real time)	Process number (Real time)	
		VCR mode (OPM)	Management number of the processing during mechanism shifting	
1	Indication for the inner data of IC6001	Starting / finishing edges detecting data (Real time)	Data of receiving key (Real time)	
		00: Both starting / finishing edges have not been detected 01: Starting edge is detecting now 02: Finishing edge is detecting now 03: Both starting / finishing edges are detecting now	Indicate the receiving code when the key of VCR or remote controller being operated.	

<table>
<tr><th>Service Number</th><th>Contents</th><th>Contents of Indication on minute</th><th>Contents of Indication on second</th><th>Remarks</th></tr>
<tr><td rowspan="3">2</td><td rowspan="3">Indication for the inner data of IC6001</td><td>Mechanism position (Real time)</td><td>Ordering for the Motors (Real time)</td><td rowspan="2">There are next conditions in this mode for enable the mechanism operations without a cassette tape.
● The starting / finishing edges are not detected.
● The reel lock is not detected
● The tape and the positions are not detected.
, And so on.

Press the EJET key for over 3 seconds in this mode, and then the VCR is shifted into the special modes, such as PG Adjustment, Model Code Setting, and so on.</td></tr>
<tr><td>0L: EJECT position
02: DOWN position
03: RREW position
04: LOAD position
05: REV position
06: PLAY position
07: POFF position
08: STOP_R position
09: STOP_F position
- : FF/REW position
- : Intermediate between each positions</td><td>0*, 2*: CYL off, CAP off
1*: CYL off, CAP on (fwd)
3*: CYL off, CAP on (rev)
8*, A*: CYL on, CAP off
9*: CYL on, CAP on (fwd)
B*: CYL on, CAP on (rev)
*0: Motor off
*1: Loading
*2: Unloading
*3: Break (Load + Unload)</td></tr>
<tr><td>The orders for the motors are as follows.
Bit 7: CYL ON/OFF
Bit 6: ----------
Bit 5: CAP FWD/REV
Bit 4: CAP ON/OFF
Bit 3: ----------
Bit 2: ----------
Bit 1: UNLOADING(H)
Bit 0: LOADING(H)</td></tr>
<tr><td>3</td><td>Self-diagnosis history (1st)</td><td>Error number of history 1</td><td>Supplementary data 1 and 2 of history 1.</td><td rowspan="2">In the Self-Diagnosis Memory, next 3 BYTE is memorized for an Error.
1 BYTE: Its Error number
2 BYTE: Its supplementary data</td></tr>
<tr><td>4</td><td>Self-diagnosis history (2nd)</td><td>Error number of history 2</td><td>Supplementary data 1 and 2 of history 2.</td></tr>
<tr><td>5</td><td>Self-diagnosis history (3rd)</td><td>Error number of history 3</td><td>Supplementary data 1 and 2 of history 3.</td><td>In these modes, the supplementary data 3 and 4 instead of the Error number and supplementary data 1 and 2 are indicated only while pressing STOP key.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Indication for the inner data of IC6001</td><td colspan="2">Real time servo data (4 digits) (Real time)</td><td rowspan="2"></td></tr>
<tr><td>Higher rank 1 BYTE of SERVO data</td><td>Lower rank 1 BYTE of SERVO data</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">Manual mechanism operation</td><td>Real time mechanism position</td><td>Real time ordering for the Motors</td><td rowspan="2">Press the STOP key, and then the cassette tape is unloaded.</td></tr>
<tr><td>0L: EJECT position
02: DOWN position
03: RREW position
04: LOAD position
05: REV position
06: PLAY position
07: POFF position
08: STOP_R position
09: STOP_F position
- : FF/REW position
- : Intermediate between each positions</td><td>0*, 2*: CYL off, CAP off
1*: CYL off, CAP on (fwd)
3*: CYL off, CAP on (rev)
8*, A*: CYL on, CAP off
9*: CYL on, CAP on (fwd)
B*: CYL on, CAP on (rev)
*0: Motor off
*1: Loading
*2: Unloading
*3: Break (Load + Unload)</td></tr>
</table>

7. SELF- DIAGNOSIS INDICATION DISPLAY

This VTR has a self-diagnosis and display function. If the VTR detects trouble during installation or during use, one of the following Error Codes will automatically appear in the VTR display. Error Codes are displayed in the form of a single English letter followed by two numbers, as for example "H01".

Note:

1. The indication "U" is displayed on the FIP while power remains on.
2. The indication "H" or "F" is displayed on the FIP, and the power is automatically turned off. When the power is turned on again, the Error indication code will disappear and the unit will return to normal display mode (either clock or counter is displayed).
3. This Error indication code will be stored in the microprocessor even after the AC plug being disconnected. The two-digit number portion of the stored Error indication code can be re-displayed in "second" display portion (the last 2 digits of the FIP) by placing the unit is Service Mode Number 2 When turning on Service Data Display as for example "01" or "02" etc. If a second error occurs, the most recent error will be displayed and stored until 5 self-diagnosis histories in maximum.
4. To erase the stored Error Code data, Press FF and EJECT buttons on VCR simultaneously for over 5 seconds in Service Mode 2.

Example of Error Indication on the FIP

F 0 5

HOUR	10min.	1min.	10sec.	1sec.
Blank	Blank	Management Sign	Service Data No.	

Division of Management

Management Sign	Management Division
U	User can deal with.
H	Shop can deal with.
F	It should be dealt with in service shop.

7-1. TABLE OF DETECTING CONDITION AND MOVEMENT OF MECHANISM IN DETECTING OF THE SELF-DIAGNOSIS FUNCTION

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
U10	**Dew formation** If the voltage at the dew detection input terminal is over 1.36VDC, it judged DEW.	● "U10" is indicated on the FIP when the dew is detected. ● "10" is memorized on the self- diagnosis history. ● The mechanism is unloaded to the LOAD position and wait until the dew is extinct when a tape is in the VCR. ● Cassette in operation is not accepted until the dew is extinct when a cassette tape is not in the VCR. ● The dew is judged extinct and the VCR is returned to normal condition after the voltage at the dew detection input terminal becomes less than 1.36V DC, and moreover 80 minutes passed from then.		Yes
U11	Cylinder clogs during the PLAY mode.		Cleaning the Cylinder.	Yes
H01	**CYL PFG can not be detected when the cylinder starts.** If the CYL PFG could not be detected within 5 seconds when the cylinder starts from the cylinder stop condition in tape loading completion, and so on, the load from tape to the cylinder is ridded by unloading until the LOAD position at once. If the CYL PFG could not be detected within 5 seconds after that, it is judged an Error of the cylinder system.	● "H01" is indicated automatically, and the power is turned to off in the DOWN position. ● Only the power key is accepted, and the Mechanism Initial Operation is performed.	Please check the cylinder motor, cylinder drive circuit and CYL PFG signal circuit.	Yes
H02	**The CAP FG can not be detected during the Mechanism Initial Operation (Tape rewinding by the S-Reel) in LOAD position.** When the power is turned on or the AC is input to the VCR in condition that the mechanism is stopped at LOAD position with a mechanism lock, if the CAP FG could not be detected over 255 pulses during first one second of 5 seconds tape rewinding previous to the re-loading with S-reel, that is judged a Error of the capstan system.	● "H02" is indicated automatically, and the power is turned to off in the DOWN position. ● Only the power key is accepted, and the Mechanism Initial Operation is performed.	Please check the capstan motor, capstan drive circuit and CAP FG signal circuit.	Yes
F03	**The position signal can not be detected within the regulated time for the shift to the aiming position except EJECT position during except unloading when the mechanism position is shifted.** IF the position signal could not be detected within the regulated time which is set depending on the distance to the aiming position when the mechanism is shifting the position, it is judged Mechanism Lock. The judgement depends on the input signal from the Position SW.	● In the first detection after the mode shift is started, the detection result is not judged an Error, and the Mechanism Initial Operation is performed. ● If the position signal aimed to is not detected again during this Mechanism Initial Operation, it is judged an Error, and "03" is indicated automatically. ● Then the mechanism stops at the position by the automatic power off, and only the Power Key is accepted. ● After the power is turned on, the Mechanism Initial Operation in performed. ● "03" is memorized on the self- diagnosis history.	Please check the Mechanism, Loading Motor, Drive circuit, Drive control signal circuit, Position SW and the Position SW input signal circuit.	Yes

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
F04	**The position signal can not be detected within the regulated time for the shift to the aiming position except EJECT position during unloading when the mechanism position is shifted.** IF the position signal could not be detected within the regulated time which is set depending on the distance to the aiming position when the mechanism is shifting the position, it is judged Mechanism Lock. The judgement depends on the input signal from the Position SW.	● In the first detection after the mode shift is started, the detection result is not judged an Error, and the Mechanism Initial Operation is performed. ● If the position signal aimed to is not detected again during this Mechanism Initial Operation, it is judged an Error, and "04" is indicated automatically. ● Then the mechanism stops at the position by the automatic power off, and only the Power Key is accepted. ● After the power is turned on, the Mechanism Initial Operation in performed. ● "04" is memorized on the self- diagnosis history.	Please check the Mechanism, Loading Motor, Loading Motor drive circuit, Loading motor drive control signal circuit Position SW and the Position SW input signal circuit.	Yes
F05	**The S-reel pulse can not be detected when the mechanism is unloading.** If the S-reel pulse could not detected over 4 edges when the mechanism is unloading from REV position to LOAD position by the Eject operation, the Cylinder start Error or the Mechanism Initial Operation, it is judged that the S-reel table is not rotated. The judgement depends on the input signal from the S-reel sensor.	● If the Error is detected, "05" is memorized on the self- diagnosis history on the model corresponding to 3 self-diagnosis history memory. ● If the Error is detected, anything is not memorized on the self-diagnosis history and the automatic indication is not indicated on the model not corresponding to 3 self-diagnosis history memory.	Please check the mechanism S-reel system, S-reel sensor, S-reel sensor input signal circuit, Capstan motor, Capstan motor drive circuit, Capstan control signal circuit, and so on.	Yes
F06	**The position signal can not be detected within the regulated time when the mechanism position is shifted for Cassette-up.** If the position signal could not be detected within the regulated time when the mechanism is shifting the position from DOWN position to EJECT position, it is judged Mechanism Lock. The judgement depends on the input signal from the Position SW.	● If the Error is detected once, "F06" is indicated automatically. ● The mechanism is shifted for Cassette Down because there is a possibility that a odd article is bitten in the cassette holder unit, and the power is turned off when the DOWN position is detected. ● If the DOEN position can not be detected within while 5 seconds at the maximum, the power is turned off at the position. ● After the power off, only the power key is accepted. After the power on, the Mechanism Initial Operation is performed. ● "06" is memorized on the self- diagnosis history.	Please check the Mechanism, Loading motor, Loading motor drive circuit, Loading motor drive control signal circuit, Position SW and the Position SW input signal circuit.	Yes
F07	Error on REC circuit in REC mode.			Yes
F08	Error on REC circuit in except REC mode.			Yes

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
F15	**The capstan FG is not output when Cassette is inserted. (There is a possibility of the capstan system Error.)** If the capstan FG is less than 150 edges during the shift from EJECT position to LOAD position when a cassette is inserted, it is judged Error of the capstan system.	● "15" is memorized on the self- diagnosis history, when the Error is detected. ● The cassette is output.	Please check the capstan motor, capstan motor drive circuit and the CAP FG signal circuit.	No
H16	**Cylinder lock detection during the constant rotation of the cylinder.** If the HS pulse could not be detected over 500msecond during the cylinder is rotating, it is judged an Error of the cylinder system. There is a possibility of that the cylinder is tightened with the tape because the tape tension is risen by the tape load.	● "15" is memorized on the self- diagnosis history, when the Error is detected. ● The mechanism is shifted to OFF position, and the Cylinder is stopped.	Please check the Cylinder motor, Cylinder motor drive circuit and the CYL HSW signal circuit.	No
H17	**S-reel lock detection in constant running of the S-reel.** If the S-reel pulses could not be detected over the regulated time while tape is running, it is judged S-reel lock.	● "17" is memorized on the self- diagnosis history. ● The mechanism is shifted to LOAD position and tape rewinding is performed. ● The mechanism is shifted to PLAY position, and then stopped. ● The self-diagnosis history is not remained when an Error in FF or REW, the mechanism is shifted to LOAD position, and then rewinding is performed. ● The mechanism is shifted to PLAY position, and then the pinch pressure runs the tape. ● If an Error is detected again, "17" is memorized on the self-diagnosis history. ● The mechanism is shifted to LOAD position, and then tape rewinding is performed. ● The mechanism is shifted to PLAY position, and then stops.	Please check mechanism S-reel system, S-reel sensor, S-reel sensor input signal circuit, Capstan motor, Capstan motor drive circuit, Capstan control signal circuit, and so on.	Yes

Indication	Condition of the Detection	Movement of the Mechanism	Remedy /Check	Automatic Indication
H18	**T-reel lock detection in constant running of the T-reel.** If the T-reel pulses could not be detected over the regulated time while tape is running, it is judged T-reel lock.	● "18" is memorized on the self- diagnosis history. ● The mechanism is shifted to LOAD position and tape rewinding is performed. ● The mechanism is shifted to PLAY position, and then stopped. ● The self-diagnosis history is not remained when an Error in FF or REW, the mechanism is shifted to LOAD position, and then rewinding is performed. ● The mechanism is shifted to PLAY position, and then the pinch pressure runs the tape. ● If an Error is detected again, "18" is memorized on the self-diagnosis history. ● The mechanism is shifted to LOAD position, and then tape rewinding is performed. The mechanism is shifted to PLAY position, and then stops.	Please check mechanism T-reel system, T-reel sensor, T-reel sensor input signal circuit, Capstan motor, Capstan motor drive circuit, Capstan control signal circuit, and so on.	Yes
H80	**Exceptional EJECT** ● If the S-reel pulse is less than 3 pulses between LOAD position and PLAY position when the loading is finished, it is judged miss catching the tape. ● If the rewinding has not finished within the regulated time when the short rewinding on DOWN position, It is judged that the tape could not be rewound. ● If the mechanism lock is occurred during the loading to LOAD position, it is judged that the loading could not be performed. ● If the both ends are detected at LOAD position, it is judged that the tape is cut off.	● EJECT is performed. ● "80" is memorized on the self-diagnosis history ● Reason of the ejection is memorized on the "supplementary data 2".		No
F2*	Error while the PG Automatic Adjustment			Yes

WHAT ARE THE DIFFERENCES BETWEEN Z-MECHANISM & R4-MECHANISM, IN TERMS OF SELF-DIAGONOSIS MODE?

1. **OPERATION AFTER DETECTING THE ERROR:** The Mechanism operation, after detecting the error has been changed.

2.ADDITION OF ERROR NUMBER [H 80].

In very rare cases, although VCR works fine, it might be detected as malfunction.

In such a case, the error code has just memorised in history of self-diagnosis result without displaying it on FIP, to prevent needless afraid of user.

However, its data can be displayed as the supplementary data 2, to clarify the course of Ejection. (Refer to the supplementary data.)

3.DETECTING METHODS of [F15] HAS BEEN CHANGED:

In Z-Mechanism, the error code; [F15] has been detected using S-Reel pulse, it means that

the [F15] shows "S-Reel pulse does not existed although cassette is inserted."

However, in R4-Mechanism, the error code; [F15] has been detected using Capstan FG pulse, it means that the [F15] shows "Capstan FG pulse does not existed although cassette is inserted."

(The reason of this modification is that impossibility of checking the S-Reel pulse due to Mechanism construction change.

7-2. MEMORY OF THE SELF-DIAGNOSIS HISTORY AND THE SUPPLEMENTARY DATA

This is effective only in Service Mode 3, 4, 5.

(Sample)

(1) Error Number and Supplementary Data

The Supplementary Data for each Error number are memorized.

Memory No. (Error No.)	Reason	Supplementary Data	
		Data 1	Data 2
2* (Refer to Note:)	An error while the PG Automatic Adjustment	VCR mode	No Data
80	An exceptional ejection depends on a Error	VCR mode	Reason of Ejection
18	Detection of T-reel lock during the constant tape running	VCR mode	Tape position
17	Detection of S-reel lock during the constant tape running	VCR mode	Tape position
16	Detection of the Cylinder lock during the constant rotation	VCR mode	Tape position
15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Counted value of S-reel pulse
14	An exceptional detection of the DOWN position during the unloading.	No Data	No Data
08	The recording circuit is operated in except for REC mode.	VCR mode	No Data
07	The recording circuit can not be operated in REC mode.	VCR mode	No Data
06	Mechanism lock during the Cassette-up.	VCR mode	Stand-by position
05	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Tape position
04	Mechanism lock during unloading	VCR mode	Stand-by position
03	Mechanism lock during without the unloading and the cassette-up.	VCR mode	Stand-by position
02	The CAP FG could not be detected.	VCR mode	No Data
01	The cylinder could not be started. (Error of the cylinder or the cylinder driver.)	VCR mode	No Data
11	Cylinder clogs during the PLAY mode.	VCR mode	No Data
10	Dew detection.	VCR mode	No Data

*** Details of "VCR mode" of the Supplementary Data (These values are hexadecimal indication)**

0: STOP, 1: EJECT, 2: REW, 3: FF, 4:REV, 5: CUE, 6: SLOW, 7: POWEROFF, 8: PLAY, 9: STIL,
A: REC, B: REC PAUSE, C: ADUB, D: ADUB PAUSE, E: INSERT, F: INSERT PAUSE

Note: 2* is as follows.

F20	NG1 in the PG Shifter Automatic Adjustment (The cylinder rotation is unstable during the automatic adjustment.)
F21	NG2 in the PG Shifter Automatic Adjustment (The vertical sync signal is lacked while over 5 seconds on the alignment tape.)
F22	NG3 in the PG Shifter Automatic Adjustment (The installing position of Heads to the cylinder is our of specification.
F23	NG4 in the PG Shifter Automatic Adjustment (The servo is not locked to the cylinder for more than 10 sec.)

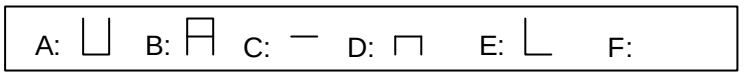
*** Explanation of "Tape position" of the Supplementary Data**

The Tape position Data is the area data of S-reel that is used for judgement of reducing speed in the Main microprocessor IC6001, and as the tape position is moved from the starting edge to the finishing edge, the value becomes smaller.

The Tape Data does not become "0" even if the tape reaches the finishing edge as the hub remains, and the tape position values are different between the large hub and the small hub as the each diameters are different from each other.

Tape Type	The aim of Tape position between the starting edge and the finishing edge
90 min. or over type (Small Hub)	The Tape position is divided into 14 stages between the Tape begining edge: "E " and the Tape end edge: "1".
60 min. or less type (Large Hub)	The Tape position is divided into 6 stages between the Tape begining edge: "A " and the Tape end edge: "5".

- "A" and "E" is hexadecimal. "A" =10 (Decimal), "E" =14 (Decimal).
- Hexadecimal indication from "A" to "E" are shown below.



- **Description of "Reason of Ejection" of the supplementary Data**

Supplementary Data 2	Reason
1	S-reel pulse is less than 3 when the loading has been completed. (Miss catching the tape)
2	Pulse Timer over during the short rewind at the DOWN position. (Error of S-photo sensor system, S-reel system, Capstan system)
3	Mechanism lock from the DOWN position to the LOAD position during the loading.
4	Both ends have been detected at the LOAD position when the loading is started.

(2) Condition for memorizing of the self-diagnosis history

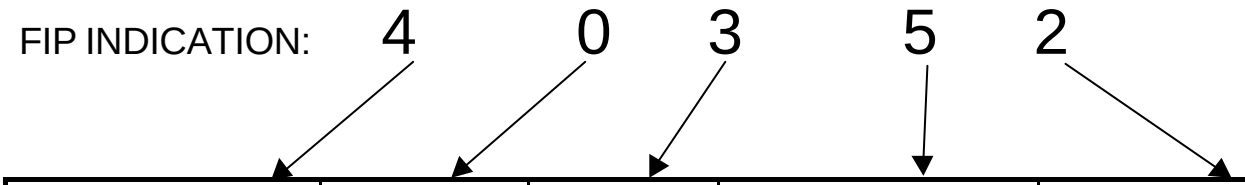
1. The self-diagnosis result and the supplementary data are the condition memorized just as an Error is detected.
2. There are the histories from number 1 to number 3.
3. The latest Error is memorized on history number 1,and then the old histories are shifted to the history number 2, 3.
4. Put out data from the memory number 3 by the shift is deleted.
5. If the latest Error is same with the history number 1 (2nd-latest), it is not memorized.
   (The same Error number is not memorized in succession)

(3) Condition for clearing the self-diagnosis history

1. A case of that press the FF key and the EJECT key simultaneously over 5 seconds.
2. A case of that the factory jumper is shorted.

(3) Indication of the self-diagnosis history.

1. The self-diagnosis histories and its supplementary data could be indicated on the FIP with Service mode of numbers from 3 to 5.
2. The procedure of setting the service mode and the format if the indication are same as usual.



Hour of one-digit	Minute of two-digit	Minute of one-digit	Second of two-digit	Second of one-digit
Service mode number	Error number		Supplementary Data	
3	Number of history 1 (The latest)		Supplementary data 1 of history 1	Supplementary data 2 of history 1
4	Number of history 2 (2nd latest)		Supplementary data 1 of history 2	Supplementary data 2 of history 2
5	Number of history 3 (3rd latest)		Supplementary data 1 of history 3	Supplementary data 2 of history 3

Both the Error numbers and its supplementary data of history 1, 2and 3 are indicated by selecting the Service mode 3, 4 and 5 as shown above.

In case of that any Error has not been memorized, the Error number and its supplementary data is indicated as " - ".

7-3. CHANGE OF MEMORY TIMING FOR ERROR NO. F03 & F04

The F03 means that the mechanism lock has been detected other than during unloading and/or cassette-up condition.

The F04 means that the mechanism lock has been detected during unloading condition.

There are many cases that initial operation is performed once after mechanism lock F03 or F04 has been detected and then the VCR returns to the normal condition.

In Z-mechanism, the self-diagnosis history is not memorized in first mechanism lock, and then only second mechanism lock is memorized.

In this method, it is quit difficult to imagine the reason of the first mechanism lock due to no data of first mechanism lock.

Therefore, memorizing timing for Error code F03 and F04 has been changed so that reason of the mechanism lock could be imagine more easily.

Mechanism lock during the mechanism initial operation cause of a mechanism lock

1. The first mechanism lock has been occurred.
   * In this condition, the applicable Error number (F03 or F04) and its supplementary data are memorized.
   * The mechanism initial operation is started.
2. A mechanism lock has been occurred again during the mechanism initial operation.
   * The Error number (F03 or F04) which is memorized on step 1 is indicated, and then the power is turned off.
3. Turn the power on after step 2, and then the initial operation is started.

The mechanism lock during the mechanism initial operation with returning from an Error or the power failure.

- Mechanism lock during the initial operation from the mid-way position.
  1. "F04 (Unloading Lock)" is indicated, and then the power is turned off.
- Mechanism lock during the initial operation from the fixed position.
  1. A mechanism lock has been occurred.
     * In this condition, the applicable Error number (F03 or F04) and its supplementary data are memorized.
     * The mechanism initial operation is started.
  2. A mechanism lock has been occurred again during the mechanism initial operation.
     * The Error number (F03 or F04) which is memorized on step 1 is indicated, and then the power is turned off.
  3. Turn the power on after step 2, and then the mechanism initial operation is started.

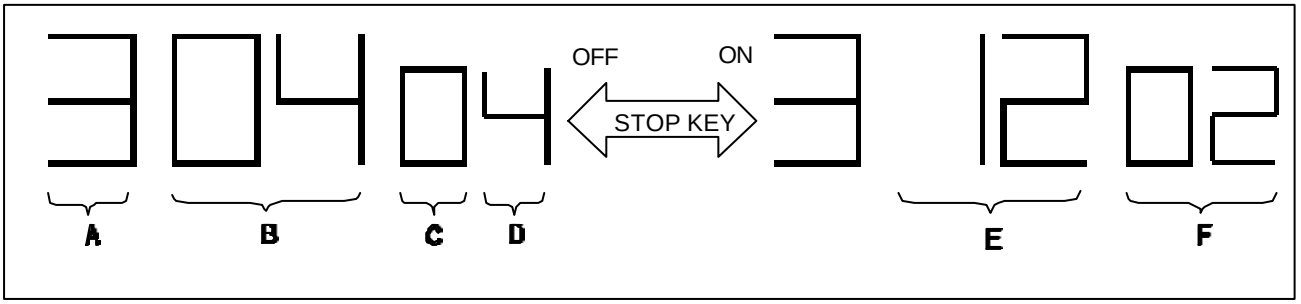
7-4. ANALIZING PROCEDURE FOR MECHANISM ERROR

Step No.	Procedures	Operation
1	Set the VCR into SERVICE MODE	Press the FF key and the EJECT key simultaneously for more than 3 seconds.
2	Set the service mode number to "3". *Memorize the Error number, its supplementary data 1 and 2 on a paper.	Press the FF key and the EJECT key simultaneously three times.
3	Indicate the supplementary data 3 and 4. *Memorize the supplementary data 3 and 4 on a paper.	While keep pressing the STOP key, memorize the supplementary data 3 and 4 on a paper.
4	Set the service mode number to "4". *Memorize the Error number, its supplementary data 1 and 2 on a paper.	Press the FF key and the EJECT key simultaneously once.
5	Indicate the supplementary data 3 and 4. *Memorize the supplementary data 3 and 4 on a paper.	While keep pressing the STOP key, memorize the supplementary data 3 and 4 on a paper.
6	Set the service mode number to "5". *Memorize the Error number, its supplementary data 1 and 2 on a paper.	Press the FF key and the EJECT key simultaneously once.
7	Indicate the supplementary data 3 and 4. *Memorize the supplementary data 3 and 4 on a paper.	While keep pressing the STOP key, memorize the supplementary data 3 and 4 on a paper.
8		
9	Memorize the mechanism supplementary data (10F0 ~ 10F9).	Refer to the EXPLANATION OF RAM MONITOR MODE shown below.
10		

● Self-Diagnosis history and Memory of the supplementary data

Memory No. (Error No.)	Reason	Supplementary Data			
		Data 1	Data 2	Data 3	Data 4
20/21/22/23	An error during PG Shifter Automatic Adjustment	VCR mode	No Data	Process No.	No data
80	An exceptional ejection depends on a Error	VCR mode	Reason of Ejection	Process No.	No data
18	Detection of T-reel lock during the constant tape running	VCR mode	Tape position	Process No.	Count of FG
17	Detection of S-reel lock during the constant tape running	VCR mode	Tape position	Process No.	Count of FG
16	Detection of the Cylinder lock during the constant rotation	VCR mode	Tape position	Process No.	No data
15	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Counted value of S-reel pulse	Process No.	Count of FG
14	An exceptional detection of the DOWN position during the unloading.	No Data	No Data	Process No.	No data
8	The recording circuit is operated in except for REC mode.	VCR mode	No Data	Process No.	No data
7	The recording circuit can not be operated in REC mode.	VCR mode	No Data	Process No.	No data
6	Mechanism lock during the Cassette-up.	VCR mode	Stand-by position	Process No.	LM data
5	S-reel pulse cannot be detected when a cassette tape is inserted. (Error of the S-reel system or the Capstan system.)	VCR mode	Tape position	Process No.	Count of FG
4	Mechanism lock during unloading	VCR mode	Stand-by position	Process No.	LM data
3	Mechanism lock during without the unloading and the cassette-up.	VCR mode	Stand-by position	Process No.	LM data
2	The CAP FG could not be detected.	VCR mode	No Data	Process No.	Count of FG
1	The cylinder could not be started. (Error of the cylinder or the cylinder drive circuit)	VCR mode	No Data	Process No.	No data
11	Cylinder clogs during the PLAY mode.	VCR mode	No Data	Process No.	No data
10	Dew detection.	VCR mode	No Data	Process No.	No data

Example:



A. Service number: 3
B. Memory number: 04(Mechanism lock during Unloading)
C. Supplementary data 1(VCR Mode): 0(STOP)
D. Supplementary data 2(Stand by position): 4(LOAD position)
E. Supplementary data 3(Process number): 12
F. Supplementary data 4(LM data): 02(Mechanism position has been changed)

(Sample)

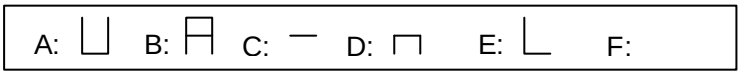
*** Details of "VCR mode" of the Supplementary Data (These values are hexadecimal indication)**
0: STOP, 1: EJECT, 2: REW, 3: FF, 4:REV, 5: CUE, 6: SLOW, 7: POWEROFF, 8: PLAY, 9: STIL,
A: REC, B: REC PAUSE, C: ADUB, D: ADUB PAUSE, E: INSERT, F: INSERT PAUSE

*** Details of "Stand-by position" of the Supplementary Data (These values are hexadecimal indication)**
E: EJECT, 2: DOWN, 3: RREW, 4: LOAD, 5: REV, 6: PLAY, 7: POFF, 8: STOP_R, 9: STOP_F, C: FF/REW

*** Explanation of "Tape position" of the Supplementary Data**
The Tape position Data are the area data of S-reel that is used for judgement of reducing speed in the microprocessor IC6001, and as the tape position is moved from the starting edge to the finishing edge, the value becomes smaller.
The Tape Data does not become "0" even if the tape reaches the finishing edge as the hub remains, and the tape position values are different between the large hub and the small hub as the each diameters are different from each other.

Tape Type	The aim of Tape position between the starting edge and the finishing edge
90 min. or over type (Small Hub)	The Tape position is divided into 14 stages between the Starting edge: "E " and the finishing edge: "1".
60 min. or less type (Large Hub)	The Tape position is divided into 6 stages between the Starting edge: "A " and the finishing edge: "5".

- "A" and "E" is hexadecimal. "A" =10 (Decimal), "E" =14 (Decimal).
- Hexadecimal indication from "A" to "E" are shown below.



*** Description of "Reason of Ejection" of the supplementary Data**

Supplementary Data 2	Reason
1	S-reel pulse is less than 3 when the loading has been completed. (Miss catching the tape)
2	Pulse Timer over during the short rewind at the DOWN position. (Error of S-photo sensor system, S-reel system, Capstan system
3	Mechanism lock from the DOWN position to the LOAD position during the loading.
4	Both ends have been detected at the LOAD position when the loading is started. (Tape has been cut off)

*** "Process No." of the supplementary Data**
The process number is memorized when an Error has occurred. (Refer to the Timing Chart of R4 Mechanism).
*** "Count of FG" of the supplementary Data**
Count of FG for 20 msec. when an Error has occurred.
*** "LM information" of the supplementary Data**
Data of the requirement for driving the loading motor.
Mechanism position has not been changed: 1
Mechanism position has been changed: 2
*** Mechanism supplementary data**

Offset (10F0H)	Data
0	OPM history 1 (Latest)
1	OPM history 2
2	OPM history 3
3	OPM history 4
4	OPM history 5 (Oldest)
5	Cumulative total of Hunting times. (Max: 255)
6	Cumulative total of passing the aimed position. (Max: 255)
7	Cumulative total of retry times for FF/REW direct connection. (Max: 255)
8	Cumulative total of retry times for DOWN FF/REW direct connection. (Max: 255)
9	Cumulative total of mechanism initial operation with a mechanism lock. (Max: 255)

*** Description of "OPM" (VCR mode)**

OPM (VCR mode)	No.	OPM (VCR mode)	No.
STOP	0x00	RSTILL	0x19
EJECT	0x01	SYPLAY	0x28
REW	0x02	AIREC	0x2a
FF	0x03	SYRECPS	0x2b
REV	0x04	SYINSERTPS	0x2f
CUE	0x05	SHREW	0x42
SLOW	0x06	SHFF	0x43
POWEROFF	0x07	SHPLAY	0x48
PLAY	0x08	REMSTOP	0x60
STILL	0x09	REMREW	0x62
REC	0x0a	REMFF	0x63
RECPS	0x0b	ASPLAY	0x88
ADUB	0x0c	ASREC	0x8a
ADUBPS	0x0d	ASADUB	0x8c
INSERT	0x0e	ASINSERT	0x8e
INSERTPS	0x0f	RHADUB	0xac
RSLOW	0x16	RHINSERT	0xae
RREV	0x14	RNTREW	0x32
RPLAY	0x18	RNTFF	0x33

8. TEST MODE

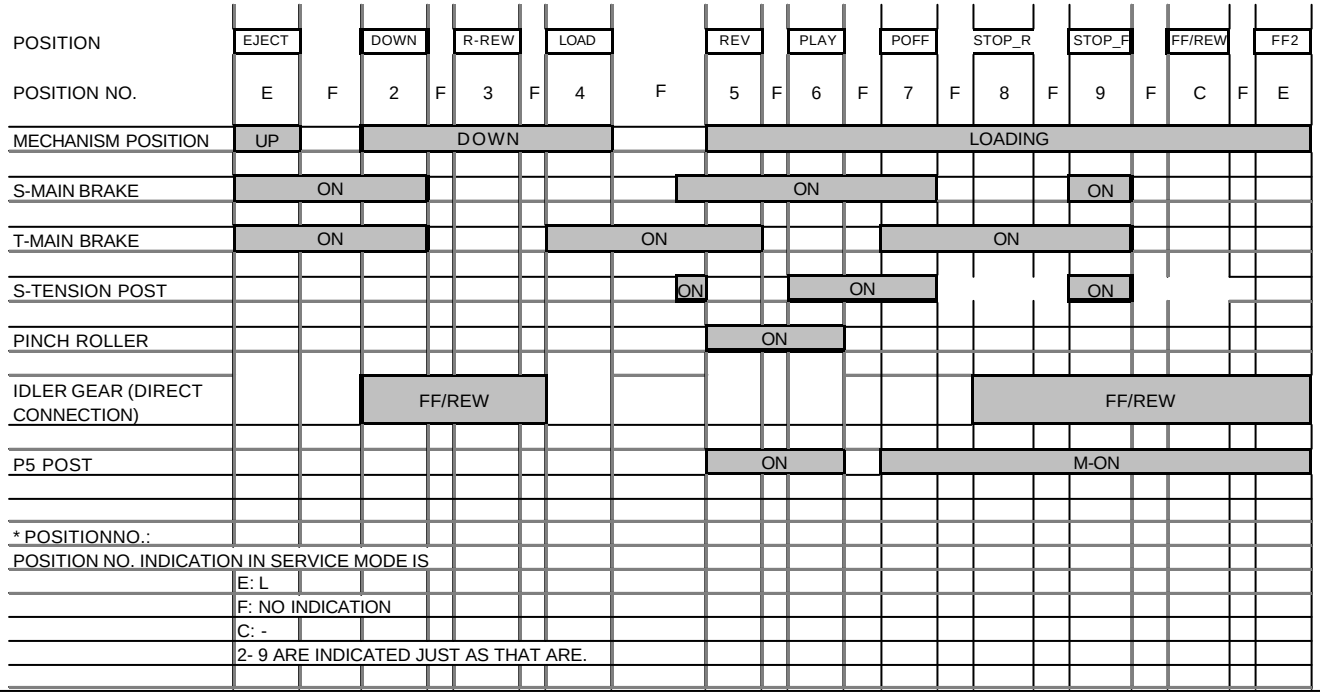
When the test terminals are shorted during the condition that AC plug is off, the following operation will be performed after AC power is applied. Test Mode Information will be displayed on FIP.

(1) Power will be turned on automatically when AC power is applied.

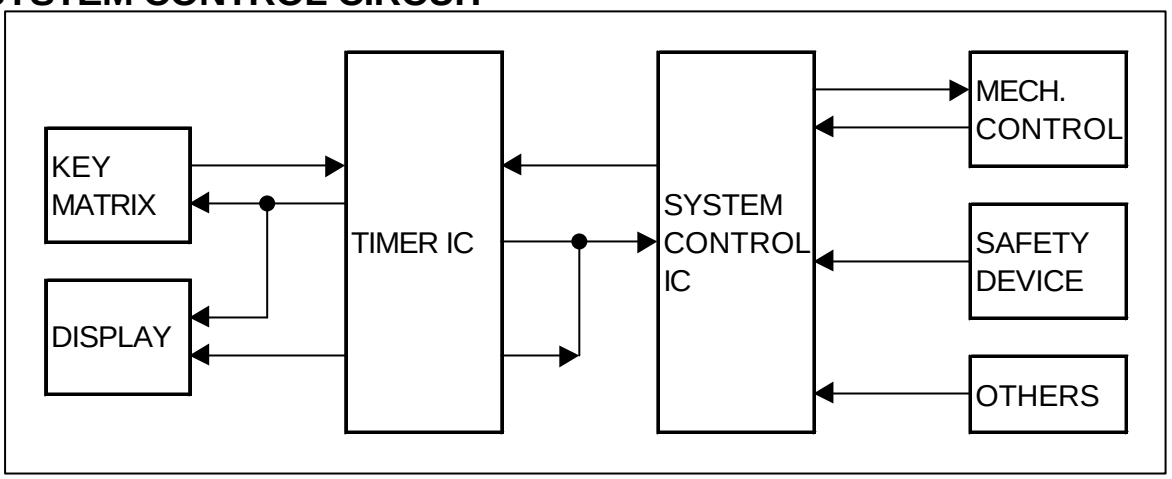
(2) The direct operations of buttons can be performed.
(Example) PLAY⟷ REC, REC⟷ EJECT

9. TIMING CHART OF MODE SW

Relationship between the Mechanism Position and the Mechanism Condition



10. SYSTEM CONTROL CIRCUIT



10-1. MODE TRANSITION

The relation between the present mode and operation key is shown in the following table.

10-1-1. Basic mode action (without EDIT function)

Present mode	Operation Key							
	P-SW	EJECT	STOP	REW	FF	PLAY	PAUSE	REC
P-OFF	P-ON	EJECT	----------	----------	----------	PLAY	----------	----------
EJECT	P-OFF	----------	----------	----------	----------	----------	----------	----------
STOP	P-OFF	EJECT	*3	REW	FF	PLAY	----------	REC
REW	P-OFF	EJECT	STOP	REV	FF	PLAY	----------	----------
FF	P-OFF	EJECT	STOP	REW	CUE	PLAY	----------	----------
REV	P-OFF	EJECT	STOP	----------	*1	PLAY	*2	----------
CUE	P-OFF	EJECT	STOP	*1	----------	PLAY	*2	----------
PLAY	P-OFF	EJECT	STOP	*1	*1	----------	*2	----------
STILL	P-OFF	EJECT	STOP	*1	*1	PLAY	PLAY	RECPS
REC	P-OFF	----------	STOP	----------	----------	----------	RECPS	----------
REC/PS	P-OFF	----------	STOP	----------	----------	----------	REC	----------

*1: The mode is changed to CUE/REV Lock when the FF/REW button is pressed briefly (for less than 0.7 sec.) at PLAY, STILL and REV modes. If it is pressed for more than 0.7 sec., CUE/REV mode continues as long as the key is depressed and is cancelled when the key is released.

*2: The mode is changed to STILL when the PAUSE key is pressed briefly (for less than 1 sec.) at other than STILL mode. Pressing and holding the PAUSE key, the mode is changed to STILL once, and after 1 sec. changed to 1/10 SLOW.

*3: The mode is changed to EJECT if the STOP button is pressed for more than 3 sec. when a cassette is in the mechanism.

10-1-2. Basic mode action (with EDIT function)

Present mode	Operation Key										
	P-SW	EJECT	STOP	REW	FF	PLAY	PAUSE	REC	ADUB	INSERT	JOG
P-OFF	P-ON	EJECT	--------	--------	--------	PLAY	--------	--------	--------	--------	--------
EJECT	P-OFF	---------	--------	--------	--------	--------	--------	---------	--------	--------	---------
STOP	P-OFF	EJECT	*3	REW	FF	PLAY	--------	REC	--------	--------	JSTILL
REW	P-OFF	EJECT	STOP	REV	FF	PLAY	---------	---------	--------	--------	JSTILL
FF	P-OFF	EJECT	STOP	REW	CUE	PLAY	--------	--------	--------	--------	JSTILL
REV	P-OFF	EJECT	STOP	--------	*1	PLAY	*2	--------	--------	--------	JSTILL
CUE	P-OFF	EJECT	STOP	*1	--------	PLAY	*2	--------	--------	--------	JSTILL
PLAY	P-OFF	EJECT	STOP	*1	*1	--------	*2	--------	--------	--------	JSTILL
STILL	P-OFF	EJECT	STOP	*1	*1	PLAY	PLAY	RECPS	ADUBPS	INSPS	JSTILL
REC	P-OFF	---------	STOP	--------	--------	--------	RECPS	--------	--------	--------	RECPS
REC/PS	P-OFF	---------	STOP	--------	--------	--------	REC	--------	--------	--------	REC
ADUB	P-OFF	---------	STOP	--------	--------	--------	*2	--------	--------	--------	JSTILL
ADUB/PS	P-OFF	---------	STOP	--------	--------	--------	ADUB	--------	--------	AVINSPS	ADUB
INSERT	P-OFF	---------	STOP	--------	--------	--------	*2	--------	--------	--------	JSTILL
INSERT/PS	P-OFF	---------	STOP	--------	--------	--------	INSERT	--------	AVINSPS	--------	INSERT
JOG STILL	P-OFF	EJECT	STOP	--------	--------	PLAY	PLAY	RECPS	ADUBPS	INSPS	PLAY

10-2. BASIC ACTION IN MECHANISM

10-2-1. Position SW and main action at each position

There are 7 kinds of absolute position and undefined sections between each position in R4 mechanism. They are regulated as follows, according to the input from position switch.

	Cassette Out >>>>> Mechanism Position >>>>>											
Position	EJECT		DOWN		R-REW		LOAD		REV		PLAY	
Position No.	E	F	2	F	3	F	4	F	5	F	6	F
	>>>>>Cassette In											
	P. OFF		STOP_R		STOP_F		FF/REW		FF2			
	F	7	F	8	F	9	F	C	F	E		

EJECT: Cassette Out
DOWN: From DOWN FF/REW to Brake, Remove the white tape on the DOWN position
R-REW: FF/REW on the DOWN
LOAD: Tape Rewinding when the AC On Time, DEW Standby, Waiting the Cylinder Rotation
REV: REV
PLAY: PLAY, CUE STILL, SLOW, REC
P.OFF: P.OFF, Timer Standby
STOP_R: From High Speed REW to Brake
STOP_F: From FF to Brake and From Slow REW to Brake
FF/REW: FF/REW

10-2-2. Mechanism initializing action at each position

Mechanism is initialized when AC is input, the power is recovered from power stoppage, or the power is turned on again after power off condition caused by mechanism lock. Initializing action differs depends on the mechanism position as described below.

(1) At FF/REW, R-REW position, tape is wound for 60 sec. According to the VCR mode before initializing occurs: If initializing has occurs at FF mode, tape is wound in forward direction; and if it has occurred at REW mode, tape is wound in reverse direction. After winding is terminated, mode changes to the stand-by mode.
(2) At undefined position (section between two absolute positions), DOWN, REW, PLAY or P.OFF STOP_F, STOP_R position, tape move to LOAD position once, and wound at LOAD position, and then loaded again. Then, mode changes to stand-by mode.
(3) At undefined position between EJECT and DOWN, cassette is ejected, and initializing finishes.
(4) At LOAD position, S-reel is rotated for 5 sec. To tighten ape. After that, tape is loaded again, and mode changes to stand-by mode at P.OFF or PLAY position.
(5) At EJECT position, Initializing finishes without any action.

If the key signal is received during mechanism being initialized, mode display changes. However, actual mode change is performed after initializing has completed.

10-2-3. Mechanism action in sand-by condition after cassette is inserted

(1) When a non-write protected tape is inserted, the tape is loaded and mechanism stands by at PLAY position in STOP mode.
(2) When a write protected tape is inserted, the tape is loaded and mode changes to PLAY mode.
(3) When standing by at PLAY position, loose the tape in order to reduce tape tension.
(After capstan stops, rotate the tape in reverse direction for FG80 counts.)
(4) When approx. 5 minutes passed during stand-by at PLAY position, mode changes to the stand-by at P.OFF position.
(5) When the power is turned off during stand-by at PLAY position, mode changes to stand- by position at P.OFF position.
(6) When the timer stand-by operation is done during stand-by at PLAY position, mode changes to stand-by position at P.OFF position.
(7) When the power is turned on in power off condition, mode changes to stand-by at PLAY position from at P.OFF position.
(8) When the timer stand-by id cancelled, mode changes to stand-by at MID position from at PLAY position.
(9) When STOP operation is performed in other than EJECT or POFF, such as PLAY or REC, mechanism waits at PLAY position.

10-2-4. Mechanism action in EJECT operation

(1) After a cassette tape is inserted, if EJECT is operated before it reaches the LOAD position, the tape moves to the LOAD position and then mechanism immediately gets in setting up action to eject the tape.
(2) After a cassette tape is inserted, if EJECT is operated after it passes the LOAD position, the tape is completed loading up to the PLAY position once. After that mechanism action switches to unloading.

10.3. SUPPLY AND TAKE-UP SENSORS

Supply and Take-up phototransistors are used to sense the beginning and end of tape. The tapes has transparent leaders enter the tape transport path, they allow infrared light from the sensor LED to reach either one of the tape end sensors (phototransistor).
If the Take-up end sensor detects the light, the microprocessor SYSTEM CONTROL IC places the VCR in the Stop mode and then performs a short Cue.
If the supply end sensor is triggered, the microprocessor activated the Stop mode and the Rewind mode.
The Rewind mode continues until that the Take-up end sensor detects the end of the tape. The tape beginning is detected by a low signal at SYSTM CONTROL IC Supply photo terminal.
If the light is received at both sensors at same time, cassette is ejected.

10-3-1. Detection timing

Start and end edges are detected in VCR mode when capstan rotates and mechanism shifts its position. LED always lights during power on.

10-3-2. Sensitivity of detecting the start and end edges of tape

1. Transparent tape that has more than approx. 50% transparency according to VHS standard is detected.
2. Tape that has less than approx. 3% transparency according to VHS standard is not detected.

10-3-3. Action after start and end edges are detected

Mode	Detection of the start edge	Detection of the end edge	Detection of both edges
POWER OFF → ON	SHORT CUE *1	SHORT REW *2	STOP
CASSETTE IN	SHORT CUE *1	SHORT REW *2	EJECT
LOADING	SHORT CUE *1	SHORT REW *2	STOP
PLAY/REC/CUE/FF/SLOW/STILL/ADUB/INSERT	----------	AUTO REW	STOP
RPLAY/REV/RSLOW	SHORT CUE *1	----------	STOP
REC PAUSE SHORT REW	----------	----------	STOP
TIMER REC/OTR AV2PB(H) REC	----------	SHIRT REW *2 → POWER OFF	STOP or P-OFF
PLAY OFF TIMER	----------	AUTO REW → POWER OFF	STOP or P-OFF

*1: SHORT CUE is to shift to STOP after rotating the tape until white part of tape is over. When other mode such as PLAY is set during detecting the start edge, mode shift to the required mode after the white part of tape is wound.
*2: SHORT REW shifts to STOP or POFF after REW is performed for approx. 2 sec. in actual time.

Both ends of tape detection (tape cut, no cassette)
(1) Cassette in: The cassette tape id ejected
(2) Other mode: The unit goes to Stop mode and it is impossible to operate except eject key.
(3) Timer REC: Power is turned off after short CUE is performed.

10-4. SAFETY TAB SWITCH

A recorded video cassette tape can be protected against accidental erasure by breaking off the tab on the cassette tape. The cassette tape can now only be used for playback. To be able to record on the cassette, cover the hole with adhesive tape. If the safety tab on the cassette has been removed, Safety Tab Switch is off (open) and high signal is supplied to SYSTEM CONTROL IC will not go into the recording mode and automatically place the VCR in the playback mode. If trying to set REC, ADUB or insert, cassette mark flashes to warn.

10-5. DEW SENSOR

If excessive moisture or condensation is present inside the machine (an internal humidity of more than 98%) the unit will stop if running. Until the moisture level decreases only the Eject mode will operate. To sense the humidity, a dew sensor is used. The sensor is a special variable resistor, which change resistance ambient humidity.
The sensor range in resistance from about 5K ohm at 90% humidity to about 50K ohm at 98% humidity. Normally, the voltage across the sensor is low because of its low resistance.
But if the moisture condenses inside the unit, the voltage at Dew terminal of SYSTEM CONTROL IC increases to indicate the Dew condition.

Tape	Mode	Dew sensor ON	Dew sensor OFF
OUT	Power	Compulsory Power on	Power off
	Dew indication	Indicate “d” and “U10”	Normal display
	Cylinder	Rotate forcibly *1	Normal mode
	Key operation	Not possible *2	Possible
	Cassette in	Immediately a cassette is ejected after it goes to cassette down position.	Possible
IN	Power	Compulsory power on	Power off
	Dew indication	Indicate “d” and “U10”	Normal display
	Cylinder	Rotating *1	Normal mode
	Key operation	Not possible *2	Possible
	Cassette condition	Shit to DOWN position and waits for removing dew	Possible

*1: When the cylinder locks in dew mode, it will be released until dew sensor is turned off.
*2: The keys not relating to the tape running operation are able to used. Switching CH and Audio are effective.
Dew sensor on: During Dew formation is detected and 80 minutes after completion of Dew detection.
Dew sensor off: 80 minutes after completion of Dew detection, because the Dew Sensor dries faster than mechanism due to their heat capacity.

10-6. SAFETY TIMER

10-6-1. Holding time of special playback and stand-by mode

Special playback and stand-by modes are automatically cancelled after fixed time, in order to protect tape and VCR. The table below shows VCR mode and its holding time.

VCR Mode	Holding time	Mode after holding time has been over
STILL	Approx. 5 sec.	STOP
RSTILL	Approx. 2 sec.	STILL (PLAY position)
PAUSE(REC/ADUB/INSERT)	Approx. 5 min.	STOP
CUE/REV	Approx. 10 min.	PLAY
SLOW/RSLOW	Approx. 10 min.	STOP
STOP(Stand-by at PLAY position)	Approx. 5 min.	Stand-by at MID position. Cylinder stops.

10-6-2. Detecting mechanism lock during mode shift

When the mode does not reach aimed position within certain time after the loading motor started, it is recognized as mechanism lock and mechanism shifts to lock detection function.
Detecting time differs depends on in which timing lock has occurred. However, lock is detected within 5 sec. Maximum.
Mode change and action after lock is detected are as follows.

Mode change	Action and detecting lock
During cassette in	Cassette out
During cassette down	Cassette up → Cassette out
During loading	Unloading → Cassette out
FF → STOP	● Stop the loading motor once, and restart it for STOP direction after 5 sec. ● P-OFF when the second lock is detected.
Other mode changes	P-OFF immediately

10-6-3. Detecting reel lock

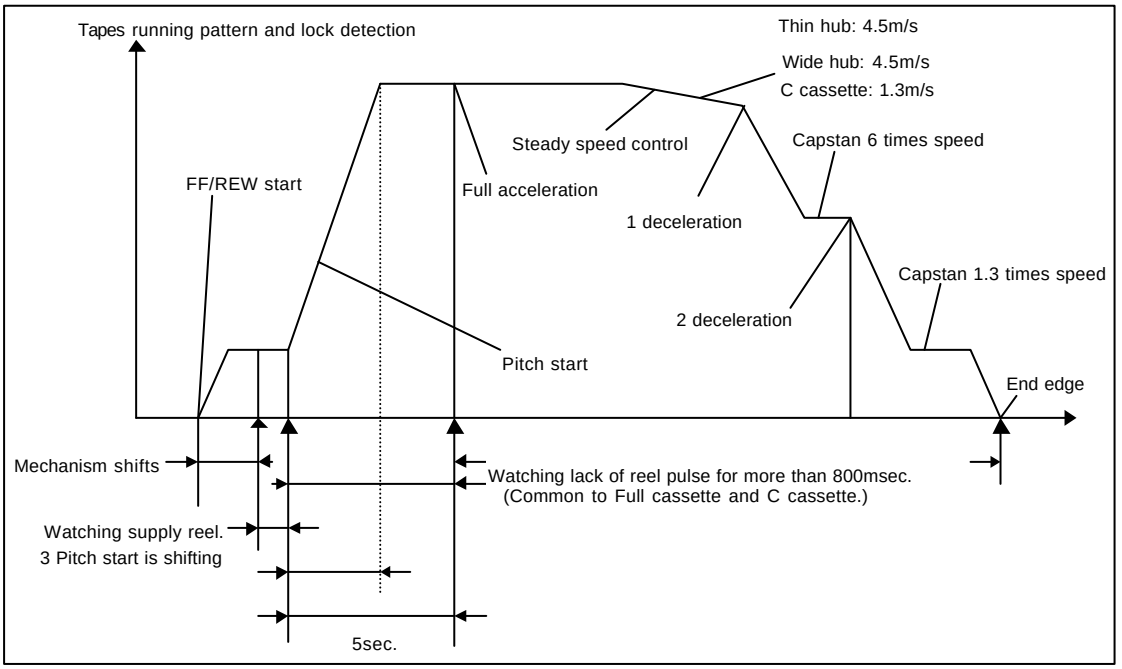
During tape running such as PLAY, CUE/REV or FF/REW, if reducing tape speed or reel mount stop is detected, these are recognized as reel lock. In this case, in order to protect tape and capstan driver, switch the VCR mode to STOP, or switch the tape running drive to capstan drive from reel drive.
Reel lock detection time is different depends on the mechanism position or capstan speed, in order to minimize the tape quantity which is wound between when the reel lock has occurred on take-up side and when the lock is detected by IC6001.

(1) PLAY, CUE/REV mode (PLAY/REV position)
In each running mode, if reel pulse edge is not input for period shown in the table below after finishing the mode change, reel lock is detected and mode changes to STOP mode.

NTSC				PAL			
Speed	VCR mode	Times	Value	Speed	VCR mode	Times	Value
2H	PLAY	± 1	3.5s	3H	PLAY	± 1	3.5s
	CUE/REV	± 2, 5	1.6s		CUE/REV	± 2, 5	1.6s
		± 7,9	0.3s			± 7,9, 11	0.3s
		± 11	0.2s			± 15	0.2s
4H	PLAY	± 1	3.5s	6H	PLAY	± 1	3.5s
	CUE/REV	± 2, 5	1.6s		CUE/REV	± 2, 5	1.6s
		± 9, 11, 13	0.3s			± 11, 15, 17, 19	0.3s
		± 13	0.2s			± 27	0.2s
6H	PLAY	± 1	3.5s	9H	PLAY	± 1	5.1s
	CUE/REV	± 2, 5	1.6s		CUE/REV	± 2, 5	2.66s
		± 11, 21, 27	0.3s			± 11, 15, 17, 19	0.5s
		± 35	0.2s			± 35	0.34s
10H	PLAY	± 1	5.1s				
	CUE/REV	± 2, 5	2.66s				
		± 11, 21, 27	0.5s				
		± 35	0.34s				

(2) FF/REW mode (FF/REW position)
If one of the following conditions exists, reel lock is detected. Rotation mode changes to Pinch roller mode (FF changes to CUE, and REW changes to REV), and rotation continues.

1. When more than 5 sec. has passed after moving to FF/REW position and waiting for reel pulse detection in supply side.
2. When reel pulse is not detected for more than 2 sec. Continuously after 5 sec. passed since the mechanism mode has finished to change (process number =0). (common to Full and C)
3. When reel pulses is not detected for more then 800 ms continuously after 5 sec. passed since the mechanism mode has finished to change. (common to Full and C)



10-6-4. Detecting cylinder lock

When cylinder Error in starting or lock in modes that cylinder rotates, such as PLAY, CUE/REV or FF/REW is detected, following actions are performed to protect tape.

Cylinder condition	Lock detection	
Starting	● When the rotation has not reached the fixed rotation speed within 5 sec. after stop condition, starting error is detected and the unload starts up to DOWN position keeping VCR mode.	
Unloading caused by starting Error	● When starting is detected within 5 sec. at DOWN position, load again and keep the current VCR mode. ● When starting is detected within 5 sec., cylinder Error is detected and power turns off.	
Normal rotation	● When HSW edge has not been detected for more than 0.5 sec., lock is detected.	
	Timer REC	Changes to POWER OFF mode.
	FF/REW	Functions brake and restart FF/REW. If lock has been detected for 2 times continuously, changes to STOP mode and mechanism stand by MID position.
	Others	Changes to STOP mode. Mechanism stands by at MID position.

10-7. Automatic features

VTR has several automatic features that always function without any settings. Explanations of each feature are described below.

(1) Auto Power On

If cassette is inserted in POWER OFF condition without cassette in, the power automatically turns on and the cassette is successfully inserted.

(2) Auto Play

When write-protected tape is inserted, VTR is automatically set to PLAY after loading.

(3) Auto Rewind

If the end edge of the tape is detected during tape running, REW starts automatically, and then stops at the start edge.
(If the end edge is detected during TIMER REC, REW is not performed. Tape stops running and the power immediately turns off.)

(4) Power Off Eject

If the EJECT key is pressed in POWER OFF condition, VCR is automatically set to POWER ON → EJECT → POWER OFF.

(5) Touch-On-Play

When the cassette is held in VCR in POWER OFF condition, if the PLAY key is pressed, the power automatically turns on and VCR starts to play.

(6) Auto remain calculation

When the customer open timer check screen, if cassette tape with tab, VCR calculates remain time automatically.
When the cassette tape is inserted, if timer check screen is opened, VCR calculates remain time automatically.

11. MOTOR DRIVE SECTION

The motor drive (Capstan, Cylinder & Loading motor) IC becomes all new. Both of the cylinder motor drive circuit and the loading motor drive circuit are included in IC2501.

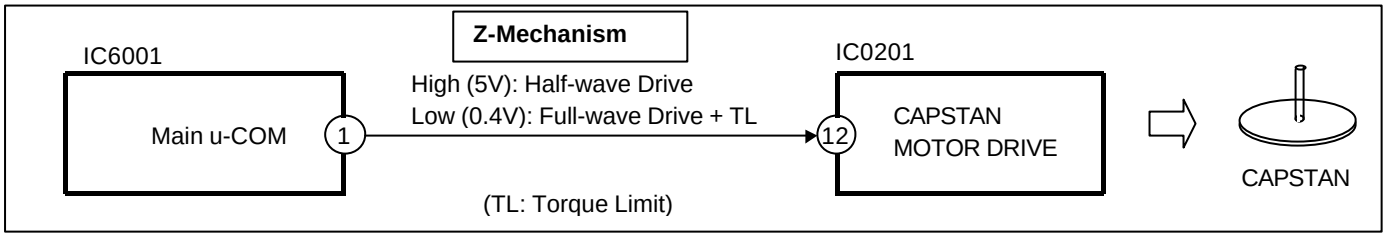
11-1.CAPSTAN DRIVE CIRCUIT

There are two major different points between Z-Mechanism and R4-Mechanism described as follows:

		Z-Mechanism	R4-Mechanism
1. High speed driving mode	High-speed Driving mode (FF, REW, CUE, REV)	Half-wave drive	Full time Full-wave drive
	Other than above mode	Full-wave drive	
2.Drive signal has been changed:		Linear drive signal	PWM drive signal

1.R4 Mechanism employs Full time Full-wave drive method

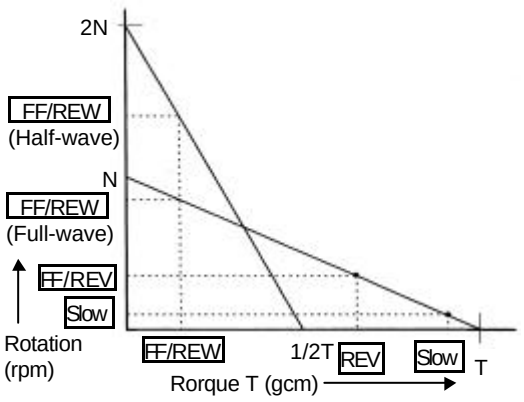
The Z-Mechanism uses both full-wave and half-wave drive depends upon VCR Mode.
In Z-Mechanism, the half-wave motor drive method is used in high-speed driving mode(such as FF, REW, CUE and REV mode), in stead of full-wave motor drive method.
(The half-wave and full wave is switched by TL (Torque Limit) signal which is supplied to IC0201(CAPSTAN MOTOR DRIVE IC) -pin12.)

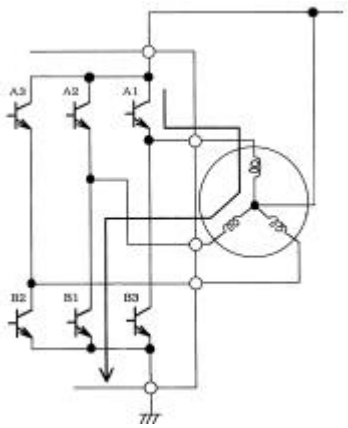


However, the R4-Mechanism employs full-wave driving method in any time.
What are the difference between half-wave drive and full-wave drive?

In generally, each methods has following features:

	Features
Half-wave driving method	*Driving Torque: SMALLER
	*Number of rotation: HIGHER
Full-wave driving method	*Driving Torque: BIGGER
	*Number of rotation: LOWER





NOTE:
It is quit difficult to say which method is better, but, in generally, since the full-wave driving method uses two phases in a path, relation between current, voltage and generated torque are efficient compared with half-wave driving method.(Half-wave driving method uses only one phase in a path.)

WHAT ARE THE DIFFERENT BETWEEN Z-MECHANISM & R4 MECHANISM IN TERMS OF HIGH SPEED MODE?
The immediate conclusion is that the method to be increasing the tape winding speed is different.
In terms of the Z-Mechanism, the number of Capstan rotation is increased to increase the tape winding speed.
(Therefore, Z-Mechanism uses half-wave driving method in high speed driving mode.)
In case of the R4 Mechanism, Reel rotation speed is increased with changing the gear ratio compared with R4-Mechanism.
(Suppose, while capstan rotates in a time, Reel table rotates 10 times, in terms of Z-Mechanism.
However, in R4-Mechanism, Reel table rotates 20 times, while one capstan rotation.
Therefore, R4-Mecanism is able to use the full-wave driving method in high speed driving mode.)

2.R4 Mechanism employs PWM (Pulse Width Motor) as Capatan Motor Drive Signal in REC or PLAYBACK mode

To improve power consumption value, R4-Mechanism uses PWM signal as Capstan Motor drive signal instead of Linear driving signal which is used in Z-Mechanism.

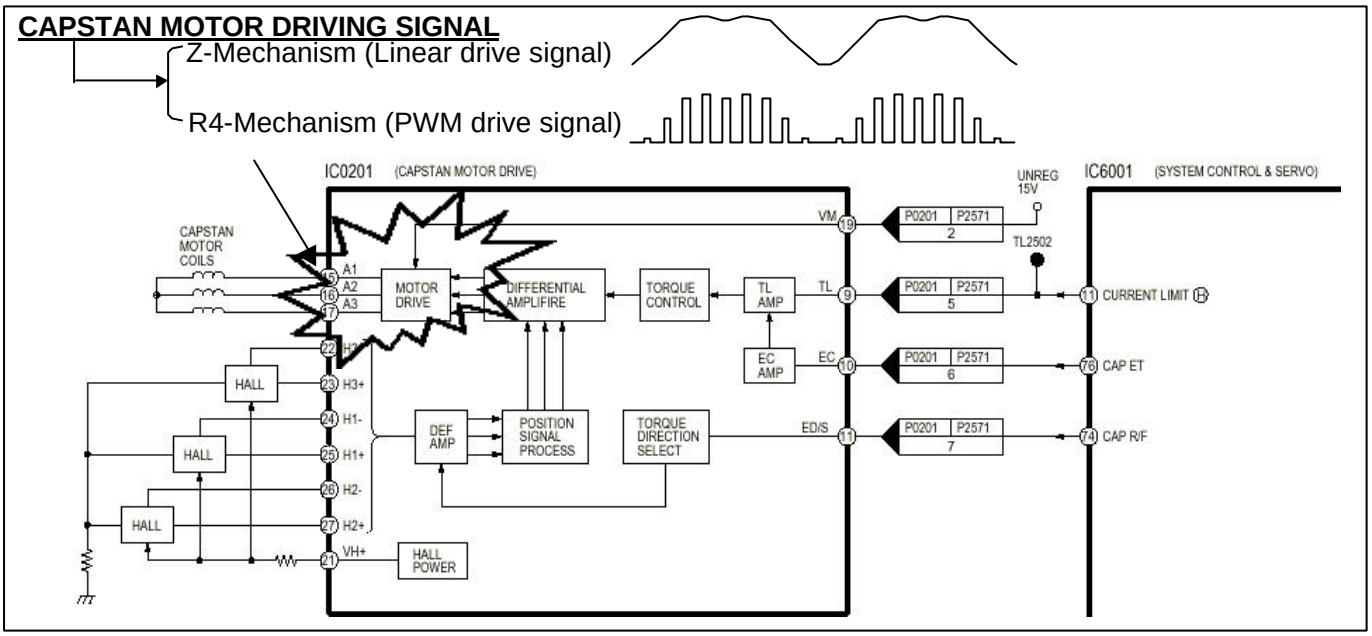
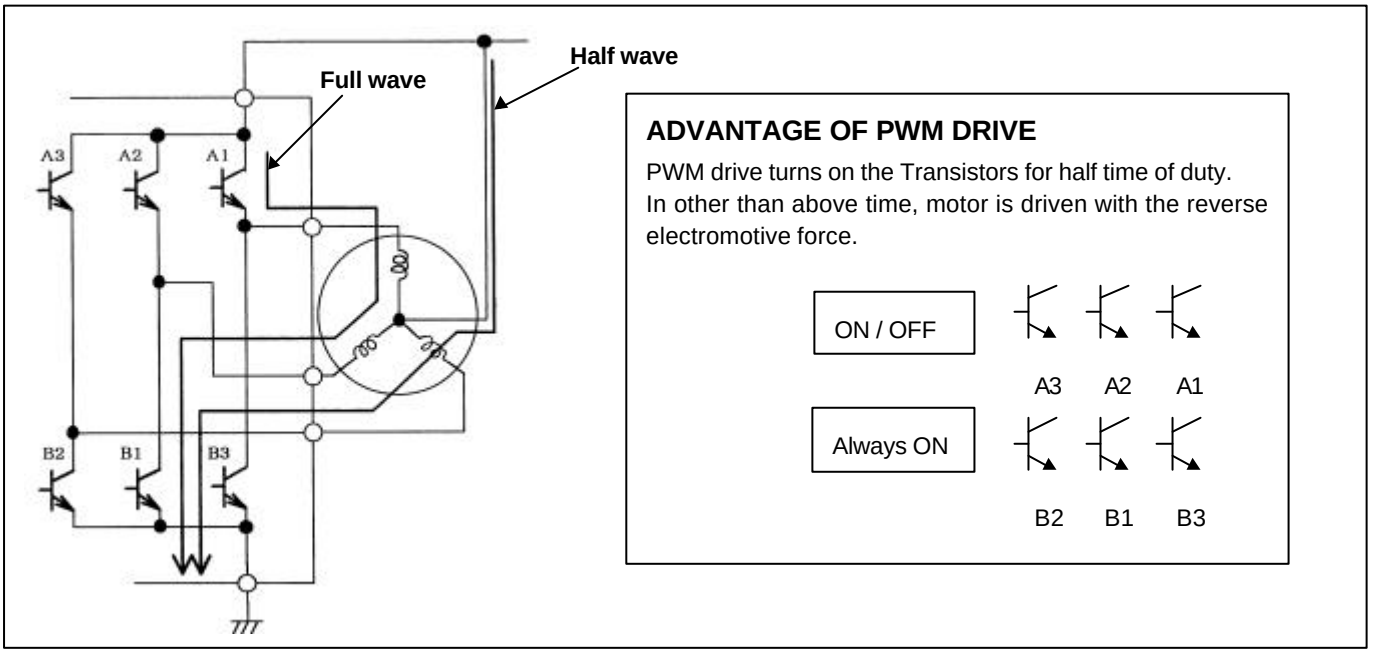
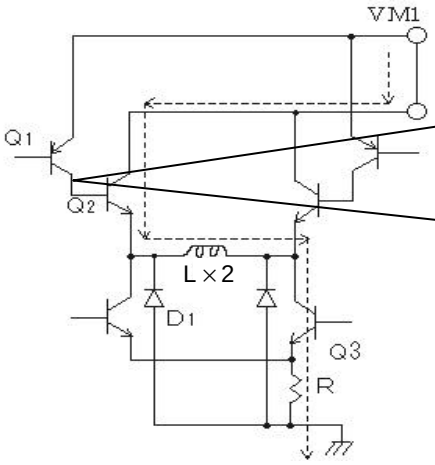


Fig.MD1

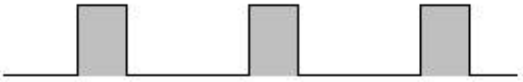
PWM CAPSTAN MOTOR DRIVE



PWM Input [In the positive period]



PWM Input Waveform at Q2-b

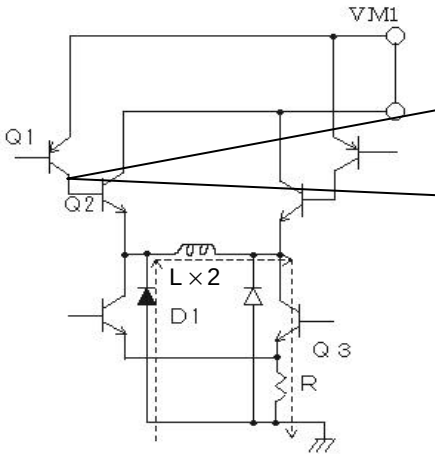


(Motor Power)

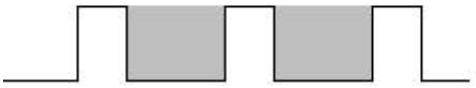
The motor current in positive period of PWM drive is flows as follows.

VM1→ Q2→ L→ Q3→ R

PWM Input [In the negative period]



PWM Input Waveform at Q2-b



(Motor Power)

The motor current in negative period of PWM drive is flows as follows by the reverse electromotive force.

D1→ L→ Q3→ R

11-2.CYLINDER DRIVE AND LOADING MOTOR DRIVE CIRCUIT

The Cylinder and Loading Motor IC is combined one piece of IC named IC2501.
The simplified block diagram and I/O chart for IC2501 are shown below.

IC2501 (BD6656FP-E2)
I/O CHART

PIN NO.	I/O	TERMINAL NAME	DESCRIPTION
1	IN	VM2	Power of the loading section.
2	OUT	OUT 1	Motor output of the loading motor.
3	---	L GND	GND of motor output of the loading section.
4	OUT	OUT 2	Motor output of the loading motor.
5	IN	F IN	Control input of the loading section.
6	IN	R IN	Control input of the unloading section.
7	IN	VG	Power for DMOS VG.
8	---	GND	GND for the signal section.
9	IN	CST	Capacitor connection terminal for oscillation of cylinder starting.
10	IN	CT 1	Capacitor connection terminal for slope of the cylinder.
11	IN	CT 2	Capacitor connection terminal for slope of the cylinder.
12	IN	PC 1	Capacitor connection terminal for phase compensation of the cylinder.
13	IN	CNF	Capacitor connection terminal for phase compensation of the cylinder.
14	IN	EC	Torque order input terminal for the cylinder.
15	IN	PG +	PG + input terminal for the cylinder.
16	IN	PG -	PG - input terminal for the cylinder.
17	OUT	PG OUT	PG 3 state output terminal.
18	OUT	PFG OUT	PG/FG 3 state output terminal.
19	IN	VCC	Power for the signal section.
20	IN	COM	Center of the cylinder motor coils.
21	IN	VM 1	Power terminal for the cylinder motor.
22	OUT	U	Output terminal for the cylinder motor.
23	OUT	V	Output terminal for the cylinder motor.
24	IN	RNF	GNG for the cylinder motor.
25	OUT	W	Output terminal for the cylinder motor.

IC2501 (BD6656FP-E2) INTERNAL BLOCK DIAGRAM